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An Evaluation of an Organizational Training Program: Assessing Cognitive, Affective, and Behavioral Outcomes

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AN EVALUATION OF AN ORGANIZATIONAL TRAINING PROGRAM:

ASSESSING COGNITIVE, AFFECTIVE, AND BEHAVIORAL OUTCOMES

by

Thomas L. Watson

A Dissertation Submitted to the Faculty of the Graduate

School of Loyola University of Chicago in Partial

Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

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VITA

The author, Thomas Lee Watson, is the son of Virgil
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His elementary education was obtained at Kenwood
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CHAPTER I

INTRODUCTION

Training and Development represents a major invest-
ment in many companies. It is estimated that private and
public U.S. employers invest over $30 billion each year in
the education and training of their employees.[1] The
Training and Development department, or Human Resource
Development department as it has also been called, provides
programs in a wide range of job-related knowledge and skill
areas to employees from all levels of the organization.
These departments employ instructors and other profes-
sionals to design, select, deliver, and administer the
programs which are usually presented in employer-owned
facilities dedicated solely to learning activities. In
addition, these departments have often been asked by the
top management in their organization to take an increasing
role in diagnosing and helping to resolve organizational
problems and to actively participate in long-range human
resource planning.

In answering the question "Why a Training and
Development Department?", Laird responds this way:

[1] Robert L. Craig and Christine Evers, "Employers as
Educators: The Shadow Education System," Unpublished, 1981.

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1. Organizations get outputs because people perform
   tasks to a desired standard.
2. Before people can perform their tasks properly,
   they must master the special technology used by
   their organization. This means acquisition of
   knowledge and skill. Sometimes this acquistion is
   needed when the employee is new to the organiza-
   tion; sometimes it is needed because the organi-
   zation changes its technology; sometimes it is
   necessary if an individual is to change places
   within the organization either by lateral transfer
   or promotion.
3. Training is the acquisition of the technology
   which permits employees to perform to standard.[2]

But as Laird goes on to point out, training depart-

ments are not only expected to train people to perform

their present tasks properly, they must also take the

responsibility to educate certain employees so they can

assume greater responsibilities in the future and to

develop people and entire organizations for futures...

sometimes for undefined and undefinable futures.[3]

Several factors have combined to contribute to the

growth in the amount of employer-sponsored training and

education and to the expanded role of the training

department:

1. Partly to compensate for inadequacies of tradi-

   tional education, not only in the basic skills of

   secondary school graduates whose deficiencies may

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[2] Dugan Laird, "One More Time: Does Your Organization
Really Need a T&D Department?", _Training/HRD_, (October,
1979), p. 31.

[3] _Ibid._, p. 32.

be a barrier to their ability to perform their jobs, but also to train many college-educated employees who lack abilities in a wide range of generic areas such as communication, problem-solving and decision-making, and interpersonal relations.

2. Partly to cope with economic and social changes that affect the workplace. These changes include government-mandated equal opportunity requirements, union seniority agreements requiring promotion based on tenure rather than ability, and the impact of both the U.S. and the world's economy on the business. This impact affects the products and services it sells, the markets where it can sell them, and the manner in which they can be most efficiently and profitably produced.

3. Partly to provide upward mobility for employees, through training for more technical or managerial responsibility. This role requires the training department to become active in the planning for and development of all of the human resources within the organization.

4. Partly to cope with the changes in technology which make job skills obsolete, to respond to the growing automation and electronic sophistication of American Industry.

5. Partly for proprietary reasons (this is how we
   want you to do it here) or for competitive
   reasons (sales training for a specific product
   line).
6. Partly for the inconveniences of scheduling,
   administration, or distance problems that are
   presented when trying to use a more traditional
   educational source.[4]

Most of the activities conducted by corporate train-
ing departments are intended to accomplish one or more of
the following immediate objectives: 1) to improve an
individual's level of self-awareness, 2) to increase an
individual's skill in one or more areas of expertise, and/
or 3) to increase an individual's motivation to perform his
or her job well.[5] The obvious intended ultimate outcomes
of these training activities are subsequent positive
changes in trainees' knowledge, skills, and attitudes,
which are expected to result in more productive behavior on
the job in the achievement of organizational objectives.

In light of the previously mentioned growth in the
importance of training and development in American business
and industry and the staggering sums of money being

[4] Craig and Evers, pp. 6-7.

[5] K. Wexley and G. Lathan, Developing and Training
Human Resources in Organizations (Glenview, Il., 1981),
p. 323.

invested, it would seem obvious that the results and benefits of training activities to the organization are manifest and well-documented. The opposite is true and the issue of evaluating the effectiveness of training is one of the most critical issues facing the training profession today. In many companies, training was initially instituted and encouraged as a "good faith" investment in its most important resources, its people. In these companies that attitude was founded on the belief that training's benefits are obvious and need no formal examination. Such an attitude is perhaps best represented by the well-worn cliche "Training doesn't cost, it pays."

In most companies, however, the need to begin formally evaluating the effectiveness of training programs has been well understood for some time. The conscientious and concerned Training Director recognizes the importance of evaluating training programs, although in a recent survey of Training and Development Journal readers, at least one-third consider evaluation to be their most challenging problem on the job.[6] The challenge was heightened for many companies during the turbulent cycles in the U.S. economy in the last few years which forced the top management teams of many corporations to ask some pointed questions

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[6] Patricia Galagan, "The Numbers Game: Putting Value on Human Resource Development," Training and Development Journal, (August, 1983), p. 48.

concerning the return on investment they were receiving from their corporate training departments.

DESCRIPTION OF THE PROBLEM

The issue of training evaluation has received a great deal of attention in the training literature in the last thirty years. Consistently there has been unanimous agreement on the importance of and need for regular evaluation of training activities. There has been a wide divergence in points of view, however, regarding some of the basic issues associated with the evaluation process. Some of the many issues at debate are:

1. What audiences should the evaluation serve?

2. What criteria of evaluation should be used?

3. Who should do the evlauation?

4. What measurement dimensions should be used?

5. What data sources should be used?

6. What data collection techniques should be used?

7. What type of design should be used?

8. How should the results of the evaluation be used?

The wide range of issues incorporated in these questions have received much attention in the training evaluation literature as will be seen. However, in many cases the debate has served to only confuse or convince trainers of the complexity and hopelessness of the task.

In 1970, Campbell, Dunnette, Lawler, and Weick did a

thorough review of the management training literature for
the previous twenty years in an attempt to assess the
effectiveness of existing evaluation studies of management
training. They focused only on evaluation studies that had
employed a control group or, in the absence of a control
group, both pre-training and post-training measures. In
their view, only studies meeting these criteria could be
expected to provide meaningful data about the effectiveness
of a particular training course. A total of seventy-three
studies were found which met these criteria. Several
common shortcomings of these studies were found:

    1. Less than a third of the studies had measured the
       effects of training on individual job performance
       or on results for the organization (sales,
       profit, productivity, etc.) Most focused on
       training outcomes typically assessed during or
       just after a course, such as trainee reactions to
       the course or improvement in knowledge.

    2. Very few studies had compared the relative
       effectiveness of two or more techniques of train-
       ing in reaching a desired objective. In other
       words, most studies did not attempt to determine
       which training technique was most effective in
       improving a particular skill (lecture, demonstra-
       tion, case study, etc.)

    3. No studies had measured the influences of

individual differences on the outcomes of train-

ing. For example, no study attempted to correlate

the success of training with the level of a

trainee's prior experience or level of education.

4. Few studies had investigated the effect that the

organizational environment has on the transfer of

training to the job setting.[7]

In 1981, Clement did a review of the training

evaluation literature from 1970 through 1980. To allow

for a direct comparison of findings, he used the same

criteria, focusing only on studies employing a control

group or at least pre-training and post-training measures.

He also examined the same four issues of concern indicated

above: 1) training outcomes measured in evaluation,

2) comparisons of relative effectiveness, 3) measurement of

the influence of individual differences, and 4) measurement

of the influence of the organizational environment. His

findings were based on twenty-six studies meeting the

above criteria and are as follows:

1. 32 per cent of the post-1970 studies reviewed

could not meet the criterion of a control group,

thus relying solely on post-training measures of

training outcomes. This situation was worse than

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[7]J.P. Campbell, M.D.Dunnette, E.E.Lawler, and
K.E.Weick, Managerial Behavior Performance and
Effectiveness (New York, 1970), p. 325.

the pre-1970 studies, where only 13 per cent had not employed a control group.

2. Few training researchers had attempted to measure the influence of the organizational environment or the impact of individual differences upon the success of a training course and little has been added to our knowledge of what training method is most effective in reaching a given objective.[8]

Clement concludes his report by stating:

In short, evaluation practices have not improved much since 1970. Furthermore, the outlook for the 1980's shows that evaluation may continue to play a lesser role in management training....The over-riding implication is that evaluation practices (by training professionals) are unlikely to change until top management demands it.[9]

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[8] R.W. Clement, "Evaluating the Effectiveness of Management Training: Progress During the 1970's and Prospects for the 1980's," Human Resource Management, (Winter, 1981), pp. 8-9.

[9] Ibid., p. 12.

IMPORTANCE OF THE STUDY

The population of the United States, while constitu-
ting only six per cent of the world's population, produces
one-third of the world's goods based on an economy whose
economic philosophy is capitalistic and whose predominant
social institution is the corporation. The training of the
managers of these corporations thus takes on added impor-
tance and training and management development, involves the
very heart and future success of these institutions and the
nation itself.[10] Taken in this context, the importance of
effective and appropriate design and execution of training
evaluation is a key ingredient which enables organizations
to accomplish their objectives.

In addressing this issue, Bunker and Cohen state:

> It is our contention that stated and unstated
> rationalizations to the contrary, competent evaluation
> is the cornerstone of meeting both organizational and
> individual educational needs, and of improving the cost
> effectiveness of the training function. Although a
> single evaluation rarely provides answers to all of the
> questions relevant to return on the training dollar
> investment, carefully planned and controlled research
> enables one to monitor and justify productive training
> expenditures, and to avoid or reduce unnecessary

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[10] Elton Reeves, "Management Development-A Conceptual
Continuum," <u>Training and Development Journal,</u> 22 (1970),
p. 35.

losses.[11]

In addition to enabling organizations to accomplish
their objectives, two additonal reasons for evaluation
have been identified by Bunker and Cohen:

1. Meeting individual educational needs: It has
   already been seen that one of the major tasks of
   the training department in an organization is to
   fully develop its human resources to prepare them
   to deal more successfully with both present and
   future challenges. Without effective evaluation
   it will be very difficult to determine how well
   this task is being accomplished. Campbell,
   et al., and Clement in their respective reviews of
   training evaluations have targeted the importance
   of individual differences that trainees bring to
   the training session and their potential impact on
   the desired outcomes.[12] As a result of effective
   evaluation, trainers could target those individual
   difference variables, such as measures of educa-
   tion or past experience, which could then be used
   to select those trainees who would benefit most

[11] Kerry Bunker and Stephen Cohen, "Evaluating Organi-
zational Training Efforts: Is Ignorance Really Bliss?"
Training and Development Journal, (August, 1978), p. 5.

[12] Campbell et al., op. cit., p. 325 and Clement, op.
cit., pp. 8-9.

from the training program.

2. Improving the cost effectiveness of training: As
   with any other organizational activity in which
   the resources of time, money, and personnel are to
   be committed in the attempt to achieve certain
   desired outcomes, it becomes necessary to find
   appropriate ways to measure the return on this
   investment to insure these scarce resources are
   being well spent. Regardless of the economic
   climate in which the organization finds itself,
   the training director must be prepared to document
   how well the training programs he or she oversees
   are achieving the desired results and at what
   cost.

A final reason why the subject of evaluation is so
important relates to how evaluation results can be made
more useful. Most of the training evaluation literature
deals with the methods of evaluation: how to make it more
objective, accurate, precise, and scientific. As
Brinkerhoff points out, evaluation tends to be viewed as a
problem, a task that must be completed. Instead, he
suggests evaluation should be viewed as a solution, rela-
tive to how training can be more efficient and effective.

> Evaluation is an important part of any training and
> development effort. It is more than an assessment of
> outcomes or effects. Evaluation is systematic inquiry
> into training contexts, needs, plans, operation, and
> effects. It should help collect information to decide

what's needed, what's working, and how to improve it, and what's happened as a result.[13]

This view of evaluation suggests that ideally the results of training evaluation should benefit the entire field of human resource development. It suggests that trainers should share their results with one another in an attempt to improve the state of the art of training and its varied attempts to improve training outcomes and their positive impact on organizational effectiveness.

This sharing of results has long been an interest of the Training in Business and Industry Special Interest Group (SIG) of the American Educational Research Association (AERA). AERA conducts annual conventions where members hear papers presented on topics of interest including the evaluation of training programs. In addition, there has been a growing interest on the part of training professionals and representatives from higher education to collaborate with each other in a number of areas including evaluation design and implementation. An example of such collaboration is a program co-hosted by the Arthur Anderson & Company and Northwestern University entitled "Joint Ventures Between Business and Higher Education in Human Resource Evaluation." The forum, held in conjunction with the joint Evaluation Network-Evaluation

[13] R.O. Brinkerhoff, "Making Evaluation More Useful," Training and Development Journal, (December, 1981), p. 66.

Research Society National Conference, was conducted at the
Arthur Anderson & Company Center for Professional Education
in St. Charles, Illinois, October 16-18, 1983. It included
representative from twenty-five academic institutions and
an equal number of training professionals from business and
industry. The primary focus of the conference was to pro-
mote the effective use of evaluation and applied research
for training and retraining the nation's workforce.
Attendees agreed on the importance of sharing the results
of "in-house" training evaluations and focused on ways to
overcome the barriers to this sharing process. A few of the
suggestions to overcome these barriers included: 1) shar-
ing of evaluation results through publication in a
newsletter and other professional journals, 2) presenta-
tions at symposiums and to the Training in Business and
Industry SIG of the AERA, and 3) collaboration with
universities and colleges by allowing graduate students
completing coursework in evaluation to conduct evaluations
of selected training programs as part of a practicum.

STATEMENT OF THE PROBLEM

It was the critical importance of this issue of training evaluation and the author's personal interest in the subject as a practicing training professional that formed the basis for this study. The question this study seeks to address is: What is effective training evaluation and how should it best be designed and implemented. In addressing this question, the study focused on the basic issues associated with the evaluation process which have been previously identified:

Identifying the audiences the evaluation will serve

Selecting the criteria of evaluation to be used

Selecting the evaluators

Identifying and selecting measurement dimensions

Selecting an appropriate design

Use of results

Because of the unique opportunities afforded by the author's work setting, serving as a trainer in a an industrial training facility, there was a convenient and readily available setting within which to investigate the various issues related to the question of what constitutes effective training evaluation. A specific objective of the study then was to take advantage of this convenient access

to on-going training activities in a corporate training
facility by selecting one of the on-going programs as the
focus for the evaluation design and implementation.

The limitations of this study include the following:

1. No attempt is made to generalize beyond the
   immediate setting. All conclusions are limited to
   the specific training course and to those
   receiving the training.

2. Only two classes (263 students) were selected from
   among the sixteen classes (over 2000 students)
   that complete the course on an annual basis. It
   is beleived these two classes constitute a repre-
   sentative sample; however, only these 263
   students were formally evaluated.

3. The use of "mailed-in" instruments created the
   potential for missing data, subjects who either
   forgot or elected not to complete the instruments
   and mail them in. A certain degree of control is
   also surrendered when relying on students to
   complete instruments accurately and unassisted.

CHAPTER II

REVIEW OF LITERATURE

INTRODUCTION

The review of literature is presented in four sections. The first deals with training in American industry, its historical roots, its growth and present status, and its organizational role. The second section attempts to summarize the literature concerning the definition of evaluation, the many issues involved, and the rationale for why training evaluation should be completed. In the third section, several models of evaluation are presented, both traditional and popular ones with a brief description of their underlying assumptions. Finally, some examples of present day training evaluations found in the literature are presented with a summary of their respective strengths and weaknesses.

TRAINING IN AMERICAN INDUSTRY

The foundations for employer-provided education finds
its roots in the Code of Hammurabi, some 4000 years ago, in
which rules governing apprenticeship can be found. The
medieval craft guild refined this form of training and it
survives today within the craft-trade union structure and
elsewhere. The basic method of apprenticeship training in
which a skilled worker transmits knowledge to a learner by
coaching, learner observation, and supervised practice
undergirds much of industrial skills training.[14] By the
1800's, apprenticeship alone was inadequate to meet
America's growing need for skilled workers. Employers
began to find other ways to train its employees. In
1872, Hoe and Company, a New York City printing manufac-
turer, established what was to be the first of many "fac-
tory schools" to train machinists so the firm could keep up
with its expanding volume of business. Other companies
were to follow suit including Westinghouse (1888), General
Electric (1901), Baldwin Locomotive Works (1901), and
International Harvester (1907). As interest in this
activity grew and several other companies also established

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[14] Cloyd Steinmetz, "History of Training," Training
and Development Handbook, 2nd ed., (New York, 1976).

schools - Western Electric, Goodyear, Ford, and National
Cash Register - some sixty represenatives of thirty-four
firms established a National Association of Corporation
Schools in 1920. This organization was later to become the
American Management Association in 1923.[15] In 1917, the
Smith-Hughes Act authorized the first federal funds for
vocational education.

During World War I the Emergency Fleet Corporation of
the U.S. Shipping Board was created and given the task of
training several hundred thousand workers to build a
"bridge of ships" to Europe. This organization, led by a
former vocational school instructor, developed a four-step
method for shipyard supervisors to use in training new
workers which was to become the central method for pro-
viding much of the industrial skills training until World
War II ("Show, Tell, Do, Check").[16]

The years after the war saw little that was unique in
the area of industrial training, although there was an in-
creased use of correspondence schools. The Depression era
of the 1930's created two training influences that were to
have later impact: 1) the population became "training-
conscious" as a result of widespread handicrafts training

[15]Craig and Evers, op. cit., p. 9.

[16]Bird McCord, "Job Instruction," in Robert L. Craig
Ed., Training and Development Handbook, pp. 32-36.

offered with federal funding in those years and 2) business recognized that economic recovery would only occur if people could be encouraged to buy their products.[17]   The National Society of Sales Training Executives was founded in 1940 to facilitate professional communications in this area.

World War II, with its demands for personnel and material, provided a major impetus to training. Nearly two million plant supervisors and foremen were trained in methods that enabled them to train an unskilled work-force, (many of whom were either women, elderly, or had some type of physical disability). Training became an integral part of the supervisory job function and there was a widespread emergence of training directors to coordinate the effort.[18]

Led by industry executives with WWI Emergency Fleet Corporation experience, the Training Within Industry (TWI) Service, later part of the Manpower Commission, in 1940 began refining years of know-how into three major training programs to be used by plant operating personnel. They were the so-called "J" Programs - Job Instruction Training, Job Methods Training, and Job Relations Training - that helped American Industry meet its wartime production needs.

[17] Steimetz, op. cit., pp. 1-10.

[18] Ibid., p. 13.

Later programs were added in Job Safety Training and Program Development Training.[19]

A simultaneous need to upgrade workers in college-level subjects was recognized and Engineering, Science and Management War Training (ESMWT) was launched. ESMWT programs in technology and management were conducted by colleges and universities both on and off-campus. Steinmetz says that "in many communites they became the forerunners of junior or community colleges," as well as "the strong roots" for the continuing education centers and management training centers that developed later.[20]

During the 1950's there was increased interest in "management development." This was based not only on the wartime emphasis on the importance of the supervisor's role in the training of employees, but also because of the advancement of management concepts in the fields of behavioral science. The importance of modern-day supervisory training had its formative growth during this period. The increasing emphasis on "human relations training," focusing on helping people to work together more effectively and productively, continued into the 1960's. Such managerial skills as leadership styles, communication skills, and problem-solving received increasing emphasis.

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[19] McCord, op. cit., pp. 32-34.

[20] Craig and Evers, op. cit., p. 11.

A popular development during this period was the use of "teaching machines" and "programmed instruction." Though the movement has lost its original "faddish" appeal, it has left behind a strong committment to sequentially-arranged instruction based on a thorough assessment of training needs. Instructional System Design, as it was later to be called, has been used by many companies in the design of their training programs.

The rapid technological changes of the 1960's and 1970's, the gradual shift in balance from manufacturing to the service industry, and the changing composition of the American workforce all combined to place increasing demands on the important role of the training function. The modern training department is expected to assume an expanded role and in many organizations has been renamed the Human Resource Development department. Its concern has become overall workforce competence, from entry-level, hourly-paid employees through the middle ranks of super-visory management to the top levels of executive manage-ment. Within this broad range of employees are included a host of technical and managerial skills required for the organization to accomplish its objectives. The modern day Human Resource Development professional is charged with a number of additional duties beyond those traditionally associated with the training function including: indenti-fying and helping to solve organizational problems,

strategic planning in forecasting the short-term and long-term organizational needs for human resources, and finding new ways to increase organizational effectiveness.

A 1978 study completed by the American Society for Training and Development identified nine major activity areas for member training and/or human resource development professionals: 1) analyzing needs and evaluating results, 2) designing and developing training programs and materials, 3) delivering training and development programs, 4) advising and counseling, 5) managing training activities, 6) maintaining organizational relationships, 7) doing research to affect the training field, 8) developing professional skills and expertise, and 9) developing basic skills and knowledge.[21]

The modern growth of corporate investment in training and education is substantial, exceeding $30 billion annually. One indication of the growth of the field is found in the ASTD membership rolls which have doubled in the last decade to over 21,000 national members with another 20,000 holding local membership in one of ASTD's 127 chapters throughout the U.S. The major portion of this growth has occurred in the 1974-1980 period.[22]

[21] Craig and Evers, op. cit., p. 16.

[22] Ibid., p. 5.

Obviously, the training function varies within individual organizations based on its needs and goals. A study of management and training practices by the Bureau of National Affairs, Inc. in 1977, surveyed 113 organizations, 65 per cent with 1000 employeees or more, 35 per cent with 1000 or less. For first-level supervisors, 75 per cent operated "in-house" training programs; for middle managers the figure was nearly 67 per cent. The next most commonly reported form of management training was "attendance at job-related outside seminars" (66 per cent for supervisors; 89 per cent for middle managers). "Self-training/correspondence courses" were used at approximately the same level in both cases (50 per cent for supervisors, 45 per cent for middle managers). "Attendance at professional or trade association meetings" was used in 96 per cent of the responding organizations for middle managers, 54 per cent for supervisors. "University development programs" had the lowest usage figures reported: 6 per cent for supervisors and 39 per cent for middle managers.[23]

An ASTD National Report in October, 1980, surveyed "on-site training or education" practices in the manu-facturing, utilities, banking and insurance industries for nonexempt (hourly) production/operations and

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[23] _Ibid._, p. 16.

office/clerical employees, as well as lower-level exempt
(salaried) employees. It found that the most common
training method used was "planned on-the-job training"- at
least 73 per cent of the companies reported this for the
non-exempt categories, 61 per cent for the exempt.
"Lecture, demonstration, and group discussion" was the next
most frequently used method overall - 45 per cent for
production/operation, 59 per cent for office/clerical, and
76 per cent for exempt employees. The next most frequently
reported method for production/operations was appren-
ticeship." At least 37 per cent of the companies reported
using full-time company instructors for training all three
employee categories, and at least 24 per cent reported
using training vendors and suppliers to the company in
training the same three employee groups. Finally, 48 per
cent reported using "consultants or other outside private
training specialists" to train exempt employees.[24]

Clearly the role of the modern day Training and
Development or Human Resource Department in an organization
is a critical one, and one in which major resources of time
money, people, and equipment are being committed. But it
is not clear how the results of this training is being
evaluated.

[24]ASTD National Report, (October 10, 1980), pp. 1-2.

TRAINING EVALUATION

Throughout the early history of training and
development previously reviewed, the issue of evaluation
was not a matter of serious concern. It was assumed that
trained employees were a benefit to the organization and
that training and development efforts were contributing to
the overall accomplishment of organizational goals.
Programs were generally allowed to stand on their own
merits and little demand for evaluation was heard, either
internally from training personnel or externally from top
management or other departments within the organization.
As has been seen, the historical beginnings of training
focused on apprenticeship and the heavy emphasis on the
acquisition of technical skills. Thus, in practice, evalu-
ation was simply a matter of determining how well the
trainee could perform the particular skill and how long it
took him to perform it. With the advent of management
training, human relations, and other conceptual skills
building, the issue of how and what to evaluate became
increasingly less clear.

The need for some type of evaluation receives nearly
unanimous agreement in the literature. Tracey states
the need for evaluation within the specific context of

training and development programs. Beyond the mere fact
that executives and managers may be demanding systematic
appraisal of training and development efforts, evaluation
is important to these activities, just as it is to any
other organizational element as a means of determining
activity levels at any given moment and of providing a
baseline for the measurement of progress. Stated simply,
he submits that evaluation can determine whether the time,
energy, and money expended in planning and operating train-
ing and development programs are producing results which
justify the investment. Tracey defends his position on the
need for evaluation by identifying three functional ways in
which it is critically important:

>   First, the steady growth of training and
> development activities in most enterprises, which in
> total involve millions of people and many more
> millions of dollars, makes it essential that those
> responsible for the management of those activities be
> able to defend their programs by knowing the accom-
> plishments and contributions of the activities to
> enterprise goals.
>   Second, evaluation provides trainers with a means of
> determining the efficiency, effectiveness, and utility
> of both management and operation. Only by appraisal
> is it possible to insure that programs are suited to
> the groups for which they are designed and that they
> result in the behavioral changes required for improved
> products or services.
>   Third, evaluation provides a starting point for the
> design of an improvement program.[25]

[25] W.R. Tracey, _Evaluating Training and Development
Systems_ (Chicago, Il., 1968), p. 13.

Though much of the literature dealing with training
evaluation begins with the assumption that the reasons for
doing evaluation are obvious, the following list includes
many of the most commonly stated and implied reasons:

1. Many groups are interested in the results.

2. To enhance survival of the training function.

3. To determine if dollars are being well spent.

4. To improve program, methods, and techniques.

5. To improve program outcomes.

6. Evaluation is intrinsicallly good.

7. It is required by a higher authority.

8. To determine training needs.

9. To establish better criteria for trainee selec-
   tion.

10. To determine what to drop/add to training.

11. To provide a basis for cutting costs.

12. To determine if there is a pay-off.

13. To permit calculations of return-on-investment.

14. To insure against doing harm.

15. To measure exactly what is being learned.

16. To document specific behavior change on the job.

17. To identify ways training can make a greater
    contribution to profit and other corporate goals.

18. To verify how much of what is learned is re-
    tained.

19. To determine if specific training is valuable.

20. To determine if ultimate objectives of training are being accomplished.

21. To give trainers a sense of importance and accomplishment.

22. To suggest areas for further research.

23. To satisfy a requirement of a federal, state, or local governmental agency. [26]

Though this list of reasons for evaluating training will generally produce agreement among training professionals, none-the-less, there are many companies who do little or no evaluation of their training activities. As has already been seen, nearly one-third of the trainers surveyed by ASTD view it as their single, greatest challenge. A list of the most commonly cited reasons for not evaluating training would include: lack of time, lack of staff, lack of money, need to convince supervisors, lack of effective methods, the overwhelming magnitude of the task, and the risk of discovering training outcomes are minimal or not measurable.[27] Perhaps two of the real reasons accounting for the lack of training evaluation

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[26] This list is a consolidation of a variety of sources, the primary one being: Alden Sullivan, "An Analysis of Management Training Program Evaluation Practices in American Industry," Doctoral Dissertation, (George Washington University, (June, 1970), p. 73.

[27] Ibid., pp. 75-77.

concerns the fact that 1) there is a perception of "limited benefit" from an evaluation, and 2) there is no real incentive to do evaluation. Few training departments are asked to "document" their results, or even to nominally assess them, so that the amount of evaluation that may be done in a particular organization is left solely to the discretion of the training director.

There is no single, integrated, and generally accepted model of evaluation that is uniformally embraced by the training profession with the possible exception of assessing trainee reactions to the program. Though serving some immediate practical purposes such as providing immediate feedback to the training staff on how well their efforts were received, these "feel-good" or "happiness" indexes (as they are sometimes derisively described in the literature) fall short of what is generally defined as acceptable training evaluation. The major criticism of what little training evaluation studies can be found in the literature can be summarized as follows: they have not been objective, systematic, comprehensive, or scientifically accurate, often violating most of the requirements of basic experimental design. Thus, the literature seems to be suggesting that most evaluations "prove nothing" about the efficacy of training. In response, many training professionals have countered that "educational studies" and "experimental research" is unrealistic, impractical, and

irrelevant to their "real-world" needs. A major source for this apparent disagreement is in the confusion over the definition of the word "evaluation."

Some writers suggest that the two terms "evaluation and "research" are essentially synonymous and equal; Suchman combines the two in his use of the term "evaluative research." He defines this as "the specific use of the scientific method for the purpose of making an evaluation.[28] In his view, there are more similarities than differences in the techniques that can appropriately be used by the evaluator and those that can be used by the researcher. He states:

> Hence, evaluative research has no special methodology of its own. As 'research' it adheres to the basic logic and rules of scientific method as closely as possible. Its canons of 'proof' and its laws of inference are the same as those of any research project. It utilizes all available techniques for the collection and analysis of data and employs a wide variety of research designs....In other words, evaluative research is still research and it differs from nonevaluative research more in objective or purpose than in design or execution.[29]

In Suchman's view, evaluation as a goal is differentiated from evaluation research as a means of attaining that goal.

Hemphill takes a significantly different view in the

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[28] E.A. Suchman, Evaluative Research (New York, 1967), p. 31.

[29] Ibid., p. 81.

treatment of the research and evaluation question. He

states:

> It is to be regretted that evaluation studies have
> earned the reputation of being poorly conceived and
> executed research. Despite the fact that precision,
> care, discipline, and logical thought are the marks
> of 'good' evaluation as well as 'good' research,
> there is no requirement that evaluation studies must
> be judged on the same basis as that on which research
> studies are now conventionally judged. It is suggest-
> ed that the criterion of worth of an evaluation study
> (program) is to be found in its contribution to a
> rational decison process. [30]

> Stufflebeam, et al., further address the issue:

> Perhaps the greatest challenge facing the evaluator
> is overcoming the idea that evaluation methodology is
> identical to research methodology. Equating them
> forces several constraints inimical to the purposes of
> evaluation and makes it impossible to meet certain of
> the needs served by good evaluation.... Evaluations
> are not designed to establish universal laws but to
> make possible judgments about the phenomenon. [31]

Tyler, in addressing the issue of how research and

evaluation studies differ, indicates that evaluation

studies differ in the manner in which value questions are

resolved - especially value questions that help determine

choices about what information is sought. In his view, the

"ideal" research study is one in which:

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[30] J. Hemphill, "The Relationship Between Research
and and Evaluation Studies" in Ralph W. Tyler (Ed.)
Educational Evaluation: New Roles, New Means (Chicago,
NSSE, 1969).

[31] D.L. Stufflebeam, "Philosophical, Conceptual, and
Practical Guides for Evaluating Education," (Kalamazoo,
Michigan, 1978).
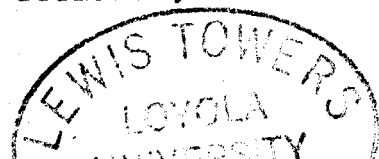
1. Problem selection and definition are the responsibility of the individual doing the research.
2. Tenative answers (hypotheses) to the problem may be derived by deduction from theories or by induction from an organized body of knowledge.
3. Value judgments by the researcher are limited to those implicit in the selection of the problem.
4. Given the statement of the problem and the hypothesis, the research can be replicated.
5. The data to be collected are determined largely by the problem and the hypothesis.
6. Relevant variables can be controlled or manipulated and systematic effects of other variables can be eliminated by randomization.

The Evaluation study may be described in terms of characteristics almost the reverse of those outlined above:

1. The problem is almost completely determined by the situation in which the study is conducted. Many people may be involved in its definition, and, because of its complexity, the problem is initially difficult to define.
2. Precise hypotheses usually cannot be generated; rather the task becomes one of testing generalizations from a variety of research studies, some of which are basically contradictory. There are many gaps which in the absence of verified knowledge must be filled by reliance on judgment and experience.
3. Value judgments are made explicit in the selection and the definition of the problem as well as in the development and implementation of the procedures of of the study.
4. The study is unique to a situation and seldom can be replicated, even approximately.
5. The data to be collected are heavily influenced if not determined by feasibility. Choices, when possible, reflect value judgments of decision-makers or of those who set policy. There are often large differences between data for which the collection is feasible and data which are of most value to the decision makers.
6. Only superficial control of a multitude of variables important to interpretation of results is possible. Randomization to eliminate the systematic effects of these variables is extremely

difficult or impractical to accomplish.[32]

Perry categorizes the differing schools of thought as to how evaluation should be defined into four major groupings:

Evaluation as Performance of Objectives - Evaluation is the process of comparing performance data with clearly specified objectives stated in behavioral terms.

Evaluation as Measurement - This definition was the norm following the growth and popularity of the measurement movement in education during and after World War I. The focus was on use of valid and reliable measurement instruments and techniques.

Evaluation as Professional Judgment - This approach utilizes the opinions of experts to support decisions. Criteria established by the experts themselves form the basis on which the evaluation is made.

Evaluation for Decision-Making - Evaluation's purpose is to provide the best possible basis for informed decison-making by program managers. The evaluator's role is to identify and collect information to support the process of choosing the best from a variety of decision alternatives.[33]

[32] Ralph W. Tyler, Prospects for Research and Development in Education (Berkley, California, 1976), pp. 13-14.

[33] S. Perry, "Evaluation: A Frame of Reference" in P. Browning (Ed.), Evaluation of Professional Short-term Training: A Literature Review and Analysis (University of Oregon, 1977).

Mahler discussed three levels or types of evaluation design:

1. Common Sense Evaluation - The unsystematic reporting of facts, inferences, or feelings about the training.
2. Systematic Evaluation - The planned use of quantitative methods decided in advance, but not necessarily experimental in nature.
3. Experimental evaluation - Quantitaive measurement under controlled experimental conditions.[34]

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[34] Walter Mahler, "Evaluation of Management Development Programs," Personnel, (September, 1953), pp. 116-122.

TRAINING MODELS

The varied views on training evaluation have produced a variety of models. Several major models will be reviewed, generally categorized by the definition of evaluation with which they are most associated.

PERFORMANCE OF OBJECTIVES - Ralph Tyler's work originally supplied the theoretical basis on which this type of evaluation is based. His model characterized evaluation as the process of comparing performance data with clearly specified objectives stated in behavioral terms. Suchman proposes a model of this type. He views the program objectives which are to be evaluated as the hypothesis to be tested in basic research. From this point of view, an evaluation project is a study of change, in which the program being evaluated is the stimulus and the desired change is the dependent variable. He suggests that the project be presented as a series of hypotheses to be tested, which state that "Activities A, B, and C will produce results X, Y and Z." He further states that "the most identifying feature of evaluation research is the presence of some goal or objective whose measure of

attainment constitutes the main focus of the research problem." [35]

A modern-day practitioner of this philosophy and a recognized "giant" in the training and development field today is Robert Mager. Though essentially an instuctional design specialist, he has had a profound impact on the field through his insistence on well-contructed, measurable, and behaviorally-grounded objectives. His course, "Criterion Referenced Instruction," has been used by many companies to train its instructional design staff. Its strong emphasis on clearly establishing the precise behavioral outcomes sets up a form of evaluation in which the trainee outcomes -- measures of knowledge, attitude, or behavior -- are compared to original course objectives.

DECISION-MAKING - Alkin represents the decision-oriented point of view. He defines evaluation as the "process of ascertaining the decision areas of concern, selecting appropriate information, and collecting and analyzing information in order to report summary data useful to decision makers in selecting among alternatives." [36]

[35] Suchman, op. cit., p. 27.

[36] M.C. Alkin, "Evaluating the Cost-Effectiveness of Instructional Program," a Symposium, (U.C.L.A., 1969), No. 25.

Five areas of evaluation are identified and de-
scribed:

1. Systems assessment - Determining range and
   specificity of program objectives.
2. Program planning - Produces ways to reach objec-
   tives.
3. Program implementation - Determines degree to
   which planning descriptions and the program
   actually implemented correspond.
4. Program improvement - Provides data on the extent
   to which objectives are being achieved.
5. Program certification - Determines whether objec-
   tives are being reached. [37]

Another type of decision-making is the one originally

developed by Stufflebeam and leading educators of the

National Study Committee on Evaluation of Phi Delta Kappa.

Called the CIPP Model, it is an acronym formed from the

four basic components found in this model: context, input

process, and product. The four components of evaluation in

the model are derived from four types of decisions: plan-

ing decisions, structuring decisions, implementing

decisions, and recycling decisions. Context evaluation is

used to provide a rationale for determining objectives. It

defines the relevant environment, identifies unmet needs

and unused opportunities, and diagnoses specific problems.

Input evaluation provides information to determine how to

utilize resources to best meet program goals. It is used

for deciding if outside assistance is necessary, determin-

ing the general strategy to be used, and planning and

[37] Ibid., p. 25.

designing the program. Process evaluation provides feed-back to persons responsible for implementation. It is accomplished through monitoring potential sources for failure, providing information for preplanned decisions during implementation, and describing what actually takes place. Product evaluation measures and interprets the attainment of objectives. It should measure intended as well as unintended outcomes.[38] A 1982 survey of ASTD members nationally found that the CIPP model was preferred over the next most popular model (Kirkpatrick's) for evaluating management education.[39]

Alden proposes another type of decision-making model in which he defines successful evaluation as a clear focus on the management decisons being considered for the training programs. He identifies four factors which need to be determined before a meaningful evaluation project can be designed:

1. Will management even consider making a decision about whether or not to change a program or how it should be changed?

[38] D.L. Stufflebeam, "Philosophical, Conceptual and Practical Guides for Evaluating Education," (Kalamazoo, Michigan, 1978).

[39] James Galvin, "What Can Trainers Learn From Educators About Evaluating Management Training?" Training and Development Journal, (August, 1983), pp. 55-56.

2. What research questions will provide the data necessary to make the management decisions?

3. What level of data is practical to collect and important enough for management to use in the decision-making process?

4. What criteria will management use to make the decison?

His model identifies four levels of data which can be applied to almost any kind of research question: partici- pant perception, expert opinion, measurement of behavior, and measurement of end results. Finally, Alden suggests that for organizational decison-makers to make maximum use of the evaluation results, "minimum acceptable criterion" must be established that defines when change should or must take place. He identifies two ways for establishing such criterion:

1. Absolute Standard - The criterion represents a "threshold" level that the measured factor must equal or exceed.
2. Comparative Standard - The criterion is derived from the performance of a control group. To meet the minimum acceptable criterion, the difference between the evaluation and control group measures must exceed chance probability.[40]

Other writers in the field of evaluation propose models which are a blend of definitions. Provus, for

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[40] Jay Alden, "Evaluation in Focus," Training and Development Journal, (October, 1978), pp. 46-50.

example, proposes an approach which combines decision-making and professional judgment schools of thought. While he maintains that evaluation should be used to determine whether a project should be continued, changed, or terminated, this process involves: 1) agreeing on program standards, 2) determining if a discrepancy exists between standards and accomplishments, and 3) using this information to pinpoint areas of the project where improvement is needed. According to Provus, this model is accomplished in five stages: design, installation, process, product, and cost.[41]

Scriven describes an objective/decision approach when he defines evaluation as:

> "a methological activity which consists simply in the gathering and combining of performance data with a weighted set of goal scales to yield either comparative or numerical ratings, and in the justification of (a) the data-gathering instrument, (b) the weighting, and (c) the selection of goals." [42]

In this model the evaluator first examines the worth of goals and then determines if they are being met. Formative evaluation (on-going) provides information on the merit of

[41] Malcolm Provus, "Evaluation of Ongoing Programs in the Public School System," in Ralph Tyler (Ed.), Educational Evaluation: New Roles, New Means (Chicago, 1969), pp. 241-283.

[42] Michael Scriven, The Methodology of Evaluation (Chicago, 1967), p. 40.

the program; summative evaluation (end-of-project) pro-
vides information on this success. The evaluation report,
composed of data-based value judgments, is used for making
decisons on program improvement.

Another model combining elements of the measurement,
performance of objectives, and decision-making evaluation
classifications is the one proposed by Kirkpatrick. He
outlines four levels or steps in the assessment of an
activity:

1. Reaction: How well did the trainee like the
   program? It includes rating sheets that trainees
   complete assessing their attitudes and opinions
   about course content, its relevance, the effec-
   tiveness of the trainer(s), etc.

2. Learning: What principles, facts, techniques were
   learned? This type of evaluation uses paper-and-
   pencil knowledge tests assessing cognitive out-
   comes or skill-demonstration tests where trainees
   must demonstrate specific learned skills.

3. Behavior: What changes in job behavior resulted
   from the program? Instruments assessing specific
   on-the-job behaviors by trainess are used which
   are completed by superiors, subordinates, and
   peers.

4. Results: What were the tangible results in terms

of impact on organizational performance? Most

commonly, such measures as increased profits,

higher sales, lower turnover, etc. are used. [43]

Kirkpartick's model has had wide influence on many

training professionals attempting to evaluate their pro-

grams. Brethower and Rummler have translated Kirkpatrick's

four levels of reaction, learning, behavior, and results

into four questions:

1. Are the trainees happy with the course?
2. Does the training course teach the concepts?
3. Are the concepts used on the job?
4. Does the application of the concepts positively
   affect the organization? [44]

In addressing these four "levels of evaluation," they

propose an additional series of questions:

1. What questions do we want answered?
2. What might we measure to answer these questions?
3. What are the dimensions of learning or perfor-
   mance we are trying to measure?
4. What are the sources of the data to help measure?
5. What are alternative ways of gathering data for
   measurement?
6. What are the evaluation criteria we want to apply
   to each question? [45]

This combination of four levels and five categories

of questions forms a matrix which can drive the design and

[43] Donald Kirkpatrick, "Techniques for Evaluating
Training Programs," Training and Development Journal,
(June, 1979), pp. 78-92.

[44] Karen Brethower and Geary Rummler, "Evaluating
Training," Training and Development Journal, (May, 1979),
pp. 13-22.

[45] Ibid., p. 15.

implementation of the evaluation.

EXPERIMENTAL EVALUATION - The issue of the differences between evaluation and research design have already been presented. The major issue that most training professionals take with making more regular use of appropriate research design is the "real world" limitations that it presents. It is extremely difficult to engineer and enforce all of the conditions necessary to the proper use of laboratory research design in the field setting.

Brethower and Rummler propose four research designs for the "real world" and some accompanying restrictions:

1. Control group - While one group receives training, a comparable group does not.

    Difficulties: Hard to find two "naturally-occurring" groups comparable on the same dimensions. Even if possible to find, other variables other than "training" are likely to change; job conditions, the economy, sales levels, thus confounding the results and making clear-cut conclusions difficult to make. Suggestions: Use only when the evaluation is seen as important enough to take extraordinary measures to ensure continuing comparability.

2. Reversal or ABA Reseach Design - This type of design evaluates by: 1) taking a baseline measurement, 2) implementing the training and

measuring its impact, and 3) returning to the original condition by removing the training and remeasuring.

    Difficulties: If measured performance improves, management is unwilling to stop the "training" - the perceived cause.

    Suggestions: Use in cases where naturally-occurring changes will lead to removing the training or other practices being evaluated.

3. Multiple Baseline - The same program is used with different groups at different times. The design is an attempt to determine whether the change in performance is "caused" by the training or just concomitant with the training.

    Difficulties: Organizations may be unwilling to spread out the introduction of something that has proven successful in the pilot setting.

    Suggestions: A decision to introduce progressively by area rather than everywhere at once may be necessitated by lack of staff or by the argument that "careful high quality introduction more than compensates for the loss incurred by not installing the program all at one time."

4. Before and After Measurement - Performance is measured "in the relevant job setting" before the training and again after the training.

Difficulties: Results may not be directy attri-
butable to training but to any other change that
occurred during the same time. Any one, or
combination of changes may at to confound
results.

Suggestions: Use only as a "last resort."
Maintain a detailed log of any changes which
might be tied to the measured performance.[46]

The use of extended control group designs have long
been recommended for training evaluations by many;
Campbell, et al.; Goldstein; Solomon; Entwisle; and
Canter. All have outlined the many advantages this type of
design. Campbell and Stanley reviewed six basic experi-
mental designs relative to their internal and external
validity in social research settings. Internal validity is
concerned with correctly concluding that an independent
variable is, in fact, responsible for variation in the
dependent variable. Threats to internal validity include:
history, maturation, testing, instrumentation, regression,
selectivity, mortality, and interaction. External validity
is concerned with the generalizability of research findings
to and across populations of subjects or settings. Threats
to external validity include the following: interaction of
selection, interaction of testing, reactive effects, and

[46] Brethower and Rummler, op. cit., pp. 19-21.

multiple treatment interference.[47] Of the six designs, the
Solomon 4-Group design, with two experimental groups and
two contol groups and with both a pretest and a posttest,
was identified as the most feasible and complete design
available.

Bunker, in a review of the the pre-test literature
from various attitude and learning situations, concluded
the following:

1. Pretest effects have been shown to be potentially
   serious contaminants in certain evaluation
   situations.
2. The risk of confounding pretest effects is greatest
   in situations where the pretest involves learning
   or recall of previously-learned material.
3. Interactions involving pretest performance and
   personal and situational variables such as I.Q.,
   sex, voluntary-involuntary participation, and the
   time lag between pretest and treatment have the
   potential to mask the main effects of pretesting
   "Pretest x Treatment" interactions.
4. Pretest effects have not been a problem in attitude
   research except in situations where the pretest
   constituted a learning device.
5. Extended control group designs are required to test
   for the presence of contaminating pretest effects.
6. Failure to control for pretest effects in the
   evaluation design may lead to erroneous predictions
   and/or conclusions regarding treatment effects.[48]

Bunker goes on to point out several unique characteristics
of the industrial training setting that suggest the
potential for evaluation contamination by pretesting may
be quite high. One characteristic concerns the fact that

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[47] D.T. Campbell and J.C. Stanley, _Experimental and
Quasi-Experimental Design For Research_ (Chicago, 1966).

[48] Bunker, _op. cit._, p. 22.

the focus of much training is in imparting technical skill
and knowledge to employees who may have prior, though
limited, exposure to the material being presented. Train-
ees have often been exposed to the subject matter by work-
ing on the job for a period of time before being sent for
training. Even if the training is designed to teach new
skills to an experienced worker, the material is often a
related extension of the tasks the worker is already
performing on the job. In addition, where training is
somewhat systematic and the sequence of training is
well-defined, it is possible for trainees to begin
"preparing" for the next level of their training through
study or on-the-job observation and experience. Bunker
concludes by offering several additional advantages for the
practice of pretesting in industrial training:

1. Deciding whether to waive training courses for
   individuals who already have the requisite skills
   and/or knowledge;
2. Determining the optimal place to insert a given
   course in the training sequence (given employee
   skills, aptitudes, and learning potential for the
   subject matter);
3. Establishing individual indices of training impact
   as opposed to an estimate of the overall effective-
   ness of the program for the average trainee; and
4. Determining the mean level and variance of relevant
   employee behaviors prior to training, in order that
   courses can be established that will be appropriate
   for company needs and trainee potential.[49]

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[49] Ibid., p. 25.

Summary

It seems clear that the choices facing the training

professional, when it comes to evaluation, are many: from

doing none at all; to resorting to the basic, but

potentially useful "happiness" indexes; to a well-designed

and implemented evaluation study applying the principles

of appropriate research design. In conclusion, Perry

summarizes well by stating:

> The definition of evaluation in use determines, to a
> large extent, the procedures used in any evaluation
> study. If evaluation is equated with measurement,
> a program might be assessed, for example, by measure-
> ment of students on a standardized test. If eval-
> uation is defined as synonymous with professional
> judgment, the worth of the program would be assessed
> by experts. If evaluation is defined as a comparison
> between performance and objectives, behaviorally-
> stated objectives would be established for the program
> and relevant student behaviors would be measured by
> using either standardized or evaluator-constructed
> instruments. Finally, where evaluation is seen as a
> process leading to informed decison-making, the
> gathering of information in order to assist in the
> making of a good judgment will comprise the evaluation
> activity. [50]

[50] Perry, op. cit., p.9.

TRAINING EVALUATIONS IN THE LITERATURE

As has already been seen, there is a scarcity in the training literature of well-designed training evaluation studies. Though it is likely that this may indeed indicate that there is not much serious training evaluation being done by training professionals in business and industry today, it is this author's contention that there are some "restraining influences" which might prohibit publication of the results of these studies and thus prevent some from ever reaching the training literature.

Some of these restraining influences may include:

1. The proprietary nature of the results - The unwillingness to share program specifics with a public that might include competitors, etc.

2. Corporate policy which inhibits or may outright prohibit the publication of studies completed internally, for internal use only.

3. The reluctance on the part of some training directors to publish negative, or less than "overwhelmingly postive" evaluation results which may reflect unfavorably on the department and the worth of its programs.

Unquestionably, there is a genuine lack of commitment

to the importance of evaluation. A recent survey of 103 East Coast companies found that 41 per cent evaluate programs solely by means of participant evaluations after a session. Asked why they make no further effort at evaluation, reponses varied but could perhaps best be summed up by the statement: "There is a real question as to the cost-effectiveness in any organized effort to follow-up." [51]

As has been previously cited, Clement reveiwed twenty-six studies found in the management training literature since 1970 and compared them to seventy-three studies reviewed by Campbell, et al., covering the pre-1970 period. Both reviews focused only on studies that utilized the combination of control groups and pre and post training measures. Clement's conclusion is that overall there has been little progress in the practice of training evaluation.

A representative sample of evaluations found in the literature will be reviewed illustrating the various types of training evaluation previously identified. Campbell, et al., and Clement identified four issues of concern in their reviews of evaluations studies: 1) training outcomes measured (either internal or exteral), 2) comparisons of

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[51] Lawrence S. Munson, How to Conduct Training Seminars (New York, 1984).

training method effectiveness, 3) measurement of the
influence of individual differences, and 4) measurement
of the organizational environment. Studies will be
reviewed in light of these criteria.

A study focusing on internal and external outcomes
as well as on the comparison of effectiveness of three
different training methods is one done by Smith. It also
employed equivalent training and control groups and used
pre and post measures of training outcomes. According to
Clement, it is one of the best post-1970 studies to be
found in the literature.[52]

The study consisted of two parts. In the first
study, modeling training was administered to eighteen
branch managers of IBM that were matched with a control
group of thirteen branch offices for geography, size, and
employee satisfaction. The training focused on how to
communicate effectively with individual employees and
groups of employees, how to feedback opinion survey
information, and how to prepare meaningful action plans
to improve morale. The control group of thirteen managers
received opinion survey data by mail, conducted branch
office meetings to present the data to employees, and then
submitted action plans to their superiors. The trained

[52] Clement, op. cit., p. 10.

group of eighteen managers received modeling training

before and after the branch office meeting to present the

survey results to employees. Four months after training, a

forty-seven question "meeting effectiveness" questionnaire

was given to both groups. Thirty-one per cent of the

employees in the trained group rated the feedback as more

effective versus 20 per cent in the control group. This

difference was significant at the .01 level.

A second study, designed to pursue the issue of the

effectiveness of the modeling training, utilized three

trained groups: a one-day Traditional Session, a two-day

Modeling session, and a two-day Modeling Session Plus

Team-Building session. Training effectiveness was measured

in terms of the branch managers' improved communication

skills, customer satisfaction survey scores, and branch

office sales performance versus quota. A control group

again was used and all four groups were matched on levels

of customer satisfaction, sales performance, and geography.

The results on the communication measure indicated no

significant change in the Traditional group, but signifi-

cant improvement in communication effectiveness for both

the Modeling and the Modeling Plus Team-Building groups.

Customer satisfaction was measured four months after

training and the level of communication effectiveness was

positively correlated with the level of customer satisfac-

tion ($r=.743$, $p<.001$). Sales performance was measured ten

months after training with only the Modeling Plus Team-Building group showing an improvement (+7.9 per cent).[53] This study combined the best of several evaluation concepts and, perhaps most importantly, yielded meaningful and useful data for its organization.

Hayes and Williams undertook a study to measure the influence of individual differences. The study measured the change in supervisory attitudes resulting from 12.5 hours of leadership training. They found the amount of attitude change to be inversely related to age, senority and span of control. They concluded that:

> ...supervisory training programs are more effective
> when the participants are young, relatively new to
> supervisory ranks, responsible for a small number of
> subordinate personnel, and have a short period of
> total service. In order to achieve program effective-
> ness....among the older supervisory personnel having
> lengthy position and total service tenure and large
> span of control responsibilities, a different type
> of program must be undertaken by training personnel.[54]

What this "different type of program" might be, was not specified by the researchers.

Another study focusing on individual differences was one done by Schein which measured the changes in attitudes,

[53] Preston Smith, "Management Modeling Training to Improve Morale and Customer Satisfaction," _Personnel Psychology_, (1976), pp. 351-358.

[54] W.G. Hayes and E.I. Williams, "Supervisory Training - An Index of Change," _Training and Development Journal_, (1971), 25(4), pp. 34-38.

interests, and personality characteristics that were the results from an eight-month management training course for college graduates. Among other things, she measured the extent to which the trainees learned a more favorable attitude toward business, a greater desire to exert a leadership role, and a more considerate leadership style. She also attempted to determine if certain individual difference variables - intelligence, personality, and background - could be identified as predictors of these changes.

The course was found to have been successful in producing the expected attitude, interest, and personality changes. More importantly, the results showed that the individual difference variables - particularly the background variables - could be identified as predictors of the attitude, interest, and/or personality changes. For example, the higher the education level of the trainee, the greater was the favorable change in the trainee's attitude toward business. The researcher concluded that individual difference variables - particularly measures of background and past experience - could be used to select those trainees who will benefit most from the training. Further, research was called for to establish the validity of these results.

House, in a rather extensive review of the research on leadership training and leadership behavior, identified

three organizational factors that influenced the transfer

of training to the job. These factors were:

1. The formal authority system within the organization.
   This refers to the objectives, policies, and prac-
   tices established by top management, within which
   the trainee must work.
2. The immediate superior of the trainee. This refers
   to his or her right to administer rewards and
   punishments and possessing the ability to encourage
   the trainee to apply principles taught in the train-
   ing course.
3. The primary work group of the trainee. This refers
   to the expectations of peers and immediate subordi-
   nates and how they will influence the trainee's
   ability to successfully apply learned concepts.[55]

Hand, Richards, and Slocum completed a study on the

impact of these organizational variables. They completed a

longitudinal study of a human relations course that taught

a consultative approach to managing. Two experimental

groups were used; one consisted of trainees who perceived

their organizational climate as favoring a consultative

approach to managing, while the other group of trainees

viewed their organizations as less democratic and more

structured. Eighteen months after the course, both

experimental groups had experienced the expected changes in

attitudes toward consultative management. However, only

the consultative experimental group was found to have

transferred the consultative approach to their job perfor-

mance. The organizational variable that apparently had

[55] R.J. House, "Leadership Training: Some Dysfunction-
al Consequences," Administrative Science Quarterly, (1968),
12, pp. 556-571.

influenced the post-training behavior of the trainees was

the decision-making of top management with regard to salary

increases and promotions. Whereas the consultative experi-

mental group was encouraged by means of such rewards to

apply the training on the job, the group of trainees from

the less democratic organization was not encouraged in this

manner. The researchers concluded that:

> "Training courses should be designed and conducted
> in light of the influences of the organizational
> environment and every attempt should be made to insure
> that influential factors within that environment are
> identified during the assessment of training needs."[56]

The only study that could be found in the training

evaluation literature utilizing the Solomon 4-Group

research design is a study done by Bunker. The investiga-

tion was designed to identify possible "pre-test" effects,

but also included the impact of individual differences and

their effects on training outcomes. The study evaluated

the success of a basic electricity training program for

telephone installer repairmen. The subjects were 131 male

installers with approximately equal company experience in

terms of tenure, training, and work exposure. Each were

randomly assigned to one of the four conditions in the

Solomon model. The pretest and posttest consisted of

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[56] H.H. Hand, D. Richards and J.W. Slocum, Jr.,
"Organizational Climate and the Effectiveness of a Human
Relations Training Program," Academy of Management Journal,
(1973), 16, pp. 185-195.

equivalent forms of an objective test of basic electricity
knowledge. A numerical aptitude test was also administered
to divide groups into three levels of numerical aptitude
(high, medium, and low). Analysis of data indicated a
substantial main effect for training, a nonsignificant main
effect for pretesting, and no evidence of intereactions.
However, a three-way ANOVA was performed to provide a test
of the hypothesis that intelligence factors can act to
moderate and/or mask simple pretest effects and/or
interactions. A significant Numerical Aptitude X Pretest X
Training interaction was obtained. It was determined that
the posttest performance of subjects low in numerical
aptitude was hindered by exposure to the pretest in the
training condition, but was unaffected by such exposure in
the control condition. Meanwhile, persons of medium
aptitude were hindered by pretest exposure in the training
setting, but were helped when pretested in the control
setting. Subjects scoring high on numerical aptitude were
unaffected by pretest exposure in either condition. These
results demonstrate the complexity of the pretest contami-
nation problem and support Clement and Campbell's, et al.,
contention that the individual difference variables have a
direct effect on training outcomes - in this case,
obscuring simple pretest effects even when an extended
control group design is carefully designed and implemented.

In interpreting his results, Bunker states the

following:

> Restriction of the training impact for pretested
> medium and low aptitude trainees may have resulted
> from: (1) a misguided attention to the limited sample
> of the training material stimulated by the pretest
> experience...thus, the trainee may have focused only
> on developing answers to the specific items to which
> he or she had been exposed during pretesting.., (2)
> the arousal of fear of failure due to the difficulty
> encountered in completing the pretest, and (3) an
> inability to integrate pretest extractions of the
> material and the training course itself, or (4) a
> combination of the above.

A significant conclusion to be drawn from this study
is that in the absence of controls for both pretesting and
the contributing influence of numerical aptitude, the self-
biasing aspect of the evaluation process would not have
been detected. A traditional Two-Group design may have
even led to the erroneous conclusion that the training
program was ineffective.

Though by no means exhaustive, the studies cited
indicate the importance of a carefully designed and well-
thought-out evaluation design. The majority of training
evaluation being done today is limited almost solely to
trainee reactions, or at best, immediate on-the-job
outcomes. Though these studies do serve a useful purpose,
they are limited in their ability to provide meaningful
data that can benefit the organizations which underwrite
their expense.

> Bunker, op. cit., pp. 9-10.

The challenge faced by the evaluator is to balance the many issues regarding appropriate evaluation and implement a design that is an acceptable compromise to all interested parties, while at the same time maintaining research/evaluation integrity. The alternative, which sadly too many companies are electing, is to do none at all. Ultimately, it makes little sense for American business to spend billions of dollars on training and development activites for its employees and almost nothing to determine their effectiveness.

CHAPTER III

DESIGN AND METHODOLOGY

INTRODUCTION

This chapter is comprised of seven sections. In the
first section a statement of purpose is presented. The
second section outlines the major hypotheses of the study.
The third section describes the experimental setting. A
detailed description of the measurement instruments is
found in the fourth section, and in the fifth, the
procedural chronology is detailed. The last two sections
include a detailed description of the subjects and the
design for statistical analysis.

STATEMENT OF PURPOSE

The purpose of this study is to address the problem
of how to best design and implement an evaluation of a
specific training program. The one selected for this study
is the Advanced Operations Course, a ten-day course offered
by McDonald's Corporation to restaurant managers at its
corporate training facility, Hamburger University.

As has been seen in the review of the training
literature, there are many factors to consider in designing
an effective training evaluation study. Among them are:

Audience the Evaluation Should Serve - The management
and faculty of Hamburger University is the target audience
for this evaluation. It is hoped that the results of this
evaluation will provide specific information regarding the
effectiveness of the present curriculum and may indicate
ways it can be improved.

Criteria of Evaluation - Kilpatrick's four levels of
training evaluation: knowledge, attitude, behavior, and
results, offer the most comprehensive criteria on which
to base any evaluation of a training program. However, the
difficulties associated with the attempt to gather meaning-
ful data on results measures in this study influenced the
researcher to limit the criteria for this evaluation to
knowledge, attitude, and behavior outcomes.

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Selecting the Evaluators - The need for additional evaluators was particularly indicated in attempting to gather useful data regarding behavior changes of those receiving the training. The most logical choices for these evaluators were the immediate supervisor and subordinates of each restaurant manager. The supervisor and subordinates were best able to evaluate the trainee's on-the-job behavior before and after training.

Selecting the Research Design - The design selected for this sudy was the Solomon 4-Group design. Campbell and Stanley cite as its chief merit the use of two experimental and two control groups, thus effectively controlling for individual differences and allowing for the determination of the actual effect of the experimental treatment. In addition, the design enables the study to identify any possible "pretest sensitization," an effect that can undermine the true strength of the treatment effect. This design also efectively addresses both the issues of internal and external validity.

Internal validity asks the question: To what extent is this design able to detect and control for alternative explanations of the evaluation results which might otherwise contaminate the genuine effects of the training program? The selected design specifically addresses this issue through the use of pretests designed to measure the pre-training levels on the relevant variables and by

randomly assigning subjects to the experimental and control

groups. Some additional benefits of pretesting include:

1. Pretesting generates greater information relative
   to the individual strengths and weaknesses of
   trainees.
2. If relevant individual differences on critical
   variables are not distributed evenly across
   comparison groups, this will become apparent
   from the pretest scores.
3. Pre-training differences may be detected among
   subgroups which permit examining the effects of
   training in the context of pre-existing
   differences. [58]

The present study uses three separate pretests measuring

cognitive, affective, and behavioral course objectives.

External validity issues are concerned with the

capability to generalize the impact of the training as

measured by cognitive and affective measures (learning and

attitude) to specific behavior change on the job. Through

the use of a Management Behavior Index, the study attempts

to identify the frequency of specific on-the-job behaviors

as perceived by the trainee's supervisor and subordinates.

Subjects were assigned to one of four experimental

conditions:

PTP = Pretested, Trained, Posttested

PUP = Pretested, Untrained, Posttested

UTP = Unpretested, Trained, Posttested

UUP = Unpretested, Untrained, Posttested

[58]Bunker and Cohen, op. cit., p. 6.

Since the study is investigating three separate outcome measures, three different "Pretests/Posttests" will be used:

1. Knowledge Outcomes = A.O.C. Pretest

2. Attitude Outcomes = Attitude Survey Index

3. Behavior Outcomes = Management Behavior Index

The analytic paradigm for the design is found in Table 1, where "X" represents the Advanced Operations Course (the experimental treatment) and the Pretest/ Posttests consist of the learning, attitude, and behavioral measures.

Table 1

Analytic Paradigm for the Study

Group #	Pretest	Independent Variable	Posttest
PTP (1)	Y1	X	Y2
PUP (3)	Y3		Y4
UTP (2)		X	Y5
UUP (4)			Y6

HYPOTHESES

The main hypothesis for this study is aimed at assessing the effectiveness of the Advanced Operations Course and is stated as follows:

1. There will be no statistically significant difference between Trained and Untrained subjects as measured by the change in Pre versus Post measures in knowledge, attitude, and behavior.

As a result of the Solomon 4-Group research design, several other hypothesized relationships will be tested.

2. There will be no statistically significant difference between Posttest versus Pretest measures of Pretested/Trained subjects (Y2 vs Y1).

3. There will be no statistically significant difference between Posttest measures of Pretested/Trained subjects versus Pretested/ Untrained subjects (Y2 vs Y4).

4. There will be no statistically significant difference between Posttest measures of Unpretested/ Untrained subjects versus Unpretested/Trained subjects (Y5 vs Y6).

5. There will be no statistically significant difference between Posttest measures of Unpretested/ Trained subjects and Pretest measures of Pretested/

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Untrained subjects (Y5 vs Y3).

6. There will be no statistically significant difference between Pretest measures of Trained subjects and Pretest measures of Untrained subjects (Y1 vs Y3).

7. There will be no statistically significant difference between Posttest measures of Pretested/Trained subjects and Unpretested/Trained subjects (Y2 vs Y5).

8. There will be no statistically significant difference between Posttest measures of Pretested/Untrained subjects and Unpretested/Untrained subjects (Y4 vs Y6).

The hypothesized relationship between "Need for Achievement" and "Academic Performance" during the training experience will be tested by the following hypothesis:

9. There will be no statistically significant relationship between the "Need for Achievement" measure and the "Total Points Earned" or "Academic Achievement" measure for all subjects.

The hypothesis that will test the relationship between individual differences among subjects and their impact on training outcomes is:

10. There will be no statistically significant relationship between the variables Education and Type and Post measures of knowledge, attitude, and behavior or the "Total Points Earned" measure for all subjects. To measure the effectiveness of training over time, a final hypothesis

will be:

11. There will be no significant difference in Post
training measures of knowledge, attitude, and behavior
taken immediately after training versus forty-five days
after training.

Operational definitions are as follows:

Independent Variables

EDUCATION   Formal education expressed in number of years
              of formal schooling.

TYPE   Form of subject employment, either in a com-
              pany-owned restaurant and thus an employee of
              McDonald's Corporation, or in a franchise res-
              taurant and thus an employee of an Owner Opera-
              tor. Also includes Owner Operators; Regis-
              tered Applicants (new operators, not yet
              assigned a restaurant); Staff (members of
              McDonald's corporate and field staff); and
              International (students from countries outside
              the continental U.S.).

NEED FOR
ACHIEVEMENT A personality variable which refers to a sub-
              ject's response to situations where some
              standard of excellence can be applied to his or
              her behavior; a motivation to be the best or

to excel.   It will be measured using the
Edwards Personal Preference Schedule which is
scored on a range of 1 to 100.

PRETESTS:

KNOWLEDGE   Score on a fifty-item multiple-choice objective
               test.   Items cover the material that is taught
               in the Advanced Operations Course.

ATTITUDE   The per cent of favorable (agree) responses on
               a twenty-nine item Attitude Survey designed to
               measure subject's attitudes about McDonald's
               Corporation and the job of restaurant
               manager.

BEHAVIOR   The composite score of three separate indexes
               complete by each subject's immediate superior
               and two subordinates.   Index consists of
               twenty behavioral statements describing
               behaviors directly related to course objec-
               tives.

                        Dependent Variables

POSTTESTS:

KNOWLEDGE   The same fifty-item multiple-choice test as the
               pretest.

ATTITUDE   The per cent favorable responses on the same

twenty-nine item attitude survey as the

pretest.

BEHAVIOR   A composite score of three indexes completed

by the same three individuals on the subject

after training. The same index is used as the

pretest.

TOTAL
POINTS
EARNED   Total number of correct responses by a subject

on six separate fifty-item multiple-choice

tests and a faculty evaluation of one hundred

points (four hundred total points possible).

EXPERIMENTAL SETTING

The Advanced Operations course is a two-week course conducted by McDonald's Corporation at its management training center, Hamburger University. The course is targeted at individuals who are about to become or who have just been promoted to restaurant manager. McDonald's has a well-defined and standardized training program used to train its restaurant management which begins at the "manager trainee" level. The program consists of a combination of in-restaurant and on-the-job training as well as classroom instruction which takes place over a two to three year period and culminates with the opportunity to attend the Advanced Operations Course at Hamburger University. Attendees have already completed this prior training and include students from throughout the United States and around the world. Students also represent the two "types" of McDonald's restaurants, company-owned and franchised. The Advanced Operations Course has been offered by McDonald's Corporation since 1961 and presently numbers over twenty thousand graduates. The curriculum has evolved over the years to reflect the changing nature of the McDonald's system and presently requires a staff of twenty-three faculty and support staff to conduct the

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fourteen to sixteen classes offered each year. The
curriculum has been designed to reinforce the trainee's
prior restaurant operations training and to provide
additional management skills targeted at increasing
effectiveness in his/her role as a restaurant manager.
During the course, trainees are housed in McDonald's Lodge,
which is located adjacent to the training facility and
specifically constructed for this purpose. A typical class
day consists of seven to eight hours of direct instruction.
Instructional techniques include lecture, role play, case
study, demonstration, workshops, and in the case of
equipment training, hands-on work. Topics addressed within
the curriculum include team-building, goal-setting,
problem-analysis and decison-making, personnel practices,
training methods for hourly employees and subordinate
management, communications and motivational techniques
(transactional analysis), paperwork and restaurant
controls, and history (a motivational review of McDonald's
corporate history). Nearly 40 per cent of the A.O.C.
curriculum is devoted to training on the various pieces of
McDonald's restaurant equipment including kitchen equipment
(fryers, grills, ice machines, beverage systems, toasters,
steamers, timers, shake and sundae machines, etc.) and
rooftop equipment (exhaust fans, heating, ventilating and
air-conditioning equipment, etc.). This training is
facilitated in part by fully operational and complete

equipment labs where trainees individually receive the hands-on opportunity to review parts identification, basic planned maintenance procedures, equipment adjustment procedures and basic troubleshooting and minor repair procedures. Throughout the training, trainees complete six separate fifty-item multiple-choice tests designed to measure learning. They must also complete other assigned homework and workshop activities. Though all tests are scored and academic results tabulated, no one "fails." A final course evaluation is completed by the faculty on each student, which is sent back to the student's immediate supervisor. All students graduate and receive a special diploma as part of a special graduation ceremony.

DESCRIPTION OF INSTRUMENTS

Four separate instruments were used to measure
Knowledge, Attitude, Behavior, and Need for Achievement.
Since both a pre and post score was required, it was
decided to use the same instrument for both the pre and
post measure. As has been discussed, the selected design
provides a strong measure for detecting the possibility of
a pretest effect.

Knowledge Test

This measure was the fifty-item multiple-choice test
known as the A.O.C. Pretest. Designed by the Hamburger
University faculty, it tests the cognitive objectives of
the course through a representative sample of test items
which are based on a test specification chart. Test items
cover the topics of teambuilding, goal-setting, problem
analysis and decision-making, personnel practices, training
methods, communication and motivational techniques and
equipment - its basic operation, planned maintenance
requirements, calibration and basic troubleshooting. The
present fifty-items are drawn from a computerized test bank
of over two thousand items which are constantly evaluated
each time they are utilized on a test. Two measures are

monitored for each test item: a Discrimination Index and a Difficulty index. The Discrimination Index measures how well the test discriminates between those who "know" and those who "do not know." It is determined by taking completed tests and separating them into into two categories - High Correct (students getting a high percentage of all test items correct), and Low Correct (students getting a low percentage of all items correct). A certain number of High and Low Correct are randomly selected (normally twenty) and the following formula is used to calculate a Discrimination Index for each item: HC - LC/HC + LC . HC is equal to the number of High Correct test papers getting the item correct. LC is the number of Low Correct test papers getting the item incorrect and it is subtracted from the High Correct number. The resulting difference is divided by the sum of the High and Low Correct. An acceptable range that has been established by the Hamburger University faculty for this index is 0.15 to 0.25. Utilizing a specially developed computer program to do the calculations, this index is updated each time a test is administered and scored. The Discrimination Index for the present A.O.C. Pretest is 0.20.

The Difficulty Index is defined as how well the item consistently measures the desired objective. This index is simply computed by dividing the number of correct responses

to an item by the total number of correct and incorrect
responses. The acceptable range that has been established
is 0.40 to 0.95. The A.O.C. Pretest has a Difficulty Index
of 0.80.

Attitude Survey

This index was designed by the researcher and was
intended to assess a student's attitude about him or
herself, McDonald's Corporation, his/her job, and his/her
training experiences. The company has been using this
type of instrument for several years to assess attitudes of
employees at all levels of the organization: hourly
employees, store management, and middle management and
corporate staff. Using these existing instruments as a
guide, a new instrument was developed. It was called an
"Opinion Survey" so students would not confuse it with
the Attitude Surveys. Each statement on the survey
describes an attitude or feeling about the company, one's
own job, the work environment, level of training received,
etc. Respondents are asked to make one of three responses:
"agree" or yes, "?" or not sure, and "disagree" or no. The
survey is scored by calculating the number of "agree"
responses and expressing them in a "Per Cent Favorable
Reponse" percentage.

Several statements found on the existing survey were
incorporated into the new survey along with some new

statements resulting in a twenty-nine statement survey.
Once finalized, the survey was submitted to the individual
in the corporate Personnel Department who was originally
responsible for developing the pre-existing Attitude
Surveys. His editorial critique was solicited in
finalizing each of the statements. The final instrument
was then pilot-tested with two A.O.C. classes. Since
fourteen of the twenty-nine Opinion Survey statements were
identical to the original Attitude Survey instrument, it
was possible to compare the overall Per Cent Favorable
Response rates on the new instrument to the national norms
for the fourteen individual statements. In the two pilot
test groups, the per cent favorable response rate on each
of the fourteen statements was nearly identical. The pilot
test results indicated that the new instrument was strongly
correlated to the pre-existing instrument used on a nation-
al level by McDonald's Corporation to measure employee
attitudes and that it was a reliable indicator of attitude
($r = .91$). Hereafter, the new instrument will be referred to
as the Attitude Survey.

Behavior Index

The Management Behavior Index was co-developed by the
researcher, Hamburger University faculty, and an outside
consultant who works with the Hamburger University staff.
The index was developed in the following manner:

1. All learner objectives for the Advanced Operations
   Course were assembled and carefully reviewed.

2. All learner objectives that were stated in behavi-
   oral terms (perform, demonstrate, show, complete,
   etc.) were selected. Those objectives remaining
   assessed either the cognitive or affective domain
   and were thus measured by the other two instru-
   ments.

3. From these remaining objectives, a list of state-
   ments was constructed with each stated in terms of
   observable manager behaviors.

4. This list was submitted to Hamburger University
   faculty and the outside consultant for their
   review and critique. Their respective subject-
   matter expertise helped to improve the wording of
   the statements to insure they accurately described
   the behavior intended by each of the course objec-
   tives.

5. After final editorial changes were made in the
   statements, the instrument was pilot-tested with a
   group of twenty A.O.C. students.

It was decided that an open-ended question would also
provide an additional data source and would serve particu-
larly well in helping to measure pre versus post results.
The instrument, designed to be completed by the subject's
immediate supervisor, a peer, and a subordinate, (a total

of three per subject), is completed anonymously. The

respondent is asked to read each management behavior state-

ment and, based on his/her recent working experience with

this individual, to select one of five responses relating

to frequency: always, often, sometimes, occasionally, or

never. A numeric scale was also listed along with these

descriptors to make the assessment easier: 10, 7, 5, 3,

and 1 respectively.

To assess the reliability of this instrument, two

separate correlation coefficients were calculated using

the twenty subjects in the original pilot test. The Split-

Half method was first utilized, yielding a correlation co-

efficient of r=.88. Since three separate individuals com-

pleted instruments on each subject, it was also possible to

calculate inter-rater reliability. The inter-rater

reliability coefficient was r=.83.

Need for Achievement

After a review of the literature and consultation

with a Loyola faculty expert on the subject, it was decided

that the Edwards Personal Preference Schedule was the best

standardized instrument available to measure the Need for

Achievement variable. It consists of 225 paired statements

and asks the student to select either the "a" or "b"

statement, based on which is most preferred or least

objectionable. Once scored, it yields results on fourteen

separate personality variables. The correlation coeffi-
cient for the Need for Achievement variable is $r = .74$.

After carefully reviewing the Index, it was felt that
the questions assessing the personality variable "hetero-
sexuality" were too controversial and potentially offensive
to use in this setting. Thus the researcher modified
the test booklet and answer key, and eliminated those
thirty items dealing with this variable. During test
administration, a careful explanation was provided to
insure accuracy of completion. Since scoring is based on
gender and since results were to be correlated with aca-
demic achievement, subjects were asked to record their
student numbers on the answer sheet. All students were
offered the option of not completing the test at all or
completing it anonymously. Twenty-three students (9 per
cent) elected not to complete the test.

PROCEDURAL CHRONOLOGY

The original concept of this study was developed in the fall of 1983. As preliminary ideas for structuring the study were being developed, a written questionnaire was sent to twenty-two present and former members of the Hamburger University instructional staff soliciting their ideas and input on such factors as:

What are the significant individual difference factors that affect academic performance?

What on-the-job behaviors are most impacted by having attended A.O.C.?

What are the most effective ways to measure "in-restaurant" results of A.O.C.?

Three important decisions were made as a result of this initial research:

1. Several of the H.U. faculty felt that motivation brought by students to the course was the most powerful determinant of academic achievement.

2. Though it had originally been the intention of the researcher to include a "Results" measure along with the Knowledge, Attitude, and Behavior measures, the difficulties associated with trying to arrive at appropriate in-restaurant measures

that could be directly related to A.O.C. proved nearly impossible. Thus, it was decided not to include the "Results" measure in the study.

3. To establish which of the several individual difference factors were significantly related to academic performance, a preliminary study was done. Total Points Earned is a summed total representing academic performance in the course. Thus this variable was compared to sixteen separate individual difference variables. There were 115 students in this study. A separate analysis of variance was done on Total Points Earned with each of the sixteen variables. Four were found to be significant at the .01 level as seen in Table 2. They are: Entex, a fifty-item multiple-choice test designed to measure knowledge of content learned in prior McDonald's training; Pretest and Posttest – identical versions of a fifty-item multiple-choice test designed to measure the course objectives of A.O.C.; and Education – the number of years of schooling. The variable Type, whether the student was an employee of a company-owned or franchised McDonald's restaurant, came close to the .05 level, at .07.

Once the concept for the research design was finalized, the researcher met with the Dean and Assistant Dean

Table 2

Analysis of Variance of Total Points
Earned by Individual Difference Variables

Variable	F Value	p
ENTEX	40.15	0.0001
PRETEST	30.77	0.0001
POSTTEST	26.01	0.0001
EDUC	3.09	0.01
TYPE	3.34	0.07
IOC	1.53	0.22
MCDEXP	1.47	0.20
AGE	1.37	0.25
JOB	1.30	0.31
BOC	1.20	0.28
TIME	1.19	0.25
SEX	1.07	0.30
FFEXP	0.49	0.91
SOURCE	0.47	0.50
MDP3	0.45	0.50
AEC	0.06	0.81

of Hamburger University to overview plans for data collection. Two classes, class number reference 352 and 354, were selected from the sixteen classes offered by Hamburger University in the calendar year. The data collection process was complicated by the four groups called for in the Solomon 4-Group design and the need to collect pre and post-training measures on knowledge, attitude, and behavior. Behavior instruments were to be handled by having a subject select three individuals: his/her immediate supervisor and two subordinates (or a peer and a subordinate). An instrument, a cover letter explaining how to complete the instrument, and a pre-postage paid return envelope was mailed to each of the individuals the subject selected. Though both classes would ultimately complete the A.O.C. training, Class 352 was selected as the "trained" group and randomly divided into "Pretested" and "Unpretested" groups, thus creating the PTP and UTP groups. Knowledge and Attitude Pretests were administered to these two groups on the first day of the Advanced Operations Course.

Class 354 was treated as the "Untrained" group and was also randomly divided into "Pretested" and "Unpretested" groups, thus creating the PUP and UUP groups. Knowledge, Attitude, and Behavior Pretests were collected on this group by mail prior to class, and "Posttest"

measures were collected on the first day of A.O.C. In other words, Class 354 was "Untrained" because they were pretested by mail and posttested prior to any formal instructional activities on the day Class 354 was begun. The following chronology of data collection was observed:

4/24/84 - Class 352 begins at 8:00 A.M., 138 students. Randomly selected half the class (seventy) as the PTP group and administered the Knowledge and Attitude Pretests. Subjects mailed Behavior instruments with signed cover letters to the three selected individuals requesting return within thirty days.

4/30/84 - Administered the Need for Achievement measure (the Edwards Personal Preference Test) to all students.

5/4/84 - Last day of Class 352. Administered Knowledge and Attitude Posttests to entire class- both the PTP and UTP groups.

5/7/84 - Mailed Knowledge, Attitude, and Behavior Pretests to half (sixty students) in Class 354 (the PUP group) with detailed instructions on how to complete. Subjects were requested to mail within thirty days or actually bring the completed instruments with them to A.O.C.

6/1/84   - Mailed Knowledge, Attitude, and Behavior
Posttest measures to all members (both the
PTP and UTP groups) of Class 352 with de-
tailed instructions on how to complete and
a return request of thirty days.

6/11/84 - Class 354 begins at 8:00 A.M.- 136 stu-
dents. Administered the Knowledge and
Attitude Posttest measures to both the PUP
and UUP groups.

6/16/84 - Administered the Need for Achievement
measure to all of Class 354. Prepared
Behavior instruments (Posttests) for
mailing to the three selected individuals
for each student.

This chronology provided for the necessary data
collection to generate the pre and post measures required
for the Solomon 4-Group design. In addition, the 6/1/84
mailing of Knowledge and Attitude measures to the Trained
group allowed for the collection of data on training
outcomes forty-five days after training.

DESCRIPTION OF THE SAMPLE

Subjects were randomly sampled to be included in this
study in the following manner. Hamburger University offers
sixteen Advanced Operations Courses each calendar year. In
reviewing the 1984 calendar, the researcher sought two
class dates with the maximum time between them to facili-
tate the data collection that was to be done through the
mail. Classes 352 and 354 were selected based on a five-
week gap between them. Class 352 was selected as the
"Trained" group, since it occurred first and all pretest
data could be collected on the first day of class. Class
354 was selected to be the "Untrained" group. Although
Class 354 would ultimately attend the course, pretest
measures were completed by mail and posttest measures were
completed on the first day of class, prior to training.
Students were randomly assigned to the two experimental
groups within each class through the use of an alphabetized
student roster and alternate assignment to each group.
Once this random assignment was completed, the resulting
groups were reviewed to identify non-target students. A
non-target student was anyone who was not a Manager or
Assistant Manager of a McDonald's restaurant. It included
middle-management staff, owner operators, and registered

applicants (new owner operators who have not yet opened
their restaurant). Where possible, these individuals were
reassigned, so as to balance the groups in number of
non-target students. This technique produced a
systematic random sample.[59]

As has been previously noted, the Advanced Operations
Course is the final step in a highly systematic training
program the McDonald's Corporation provides. The entire
training system consists of a series of in-restaurant,
on-the-job training experiences coupled with classroom
instruction. Entrance requirements for admission to
A.O.C. have been set by Hamburger University so students
will meet the following criteria:

1. First Assistant by Job Title.

2. Completed all appropriate prior in-restaurant
   training (the first three volumes of the
   McDonald's Management Development Program) and
   all prior classroom training.

3. Achieved a passing score (80 per cent or better)
   on a field-administered Entrance Exam. This test
   measures knowledge and skills the student should
   already possess as a result of completing the
   training referred to in #2.

[59] F. Kerlinger, Foundations of Behavioral Research
(New York, 1973), p. 256.

Occasionally, Hamburger University will waive one or more of these criteria at the request of field management. This is done normally to assure the presence of an H.U. graduate in every new McDonald's restaurant at the time it is ready to open. Because the time between when a student registers and the time a student attends A.O.C. can be as long as six months, it is frequently the case that although the student was a First Assistant when originally registered, he/she may have since been promoted to Store Manager.

DESIGN OF THE ANALYSIS

The Solomon 4-Group design selected for this study allows for several separate statistical analyses. The major analytic paradigm consists of a 2 X 2 factorial ANOVA with the posttest scores of the four groups in the cells. As can be seen below, the design enables the researcher to analyze several different comparisons and possible interactions:

	UNTRAINED	TRAINED
PRETESTED	Y4	Y2
UNPRETESTED	Y6	Y5

Separate comparisons will be made on each of the following hypothesized relationships among the mean posttest scores by using separate "t" tests:

Y2 > Y1	Y5 > Y6	Y1 = Y3
Y2 > Y4	Y5 > Y3	Y2 = Y5
		Y4 = Y6

These analyses will be done on each of the three outcome measures being evaluated: Knowledge, Attitude, and Behavior.

To test the hypothesized relationship between Need for Achievement and Academic Achievement (Total Points Earned), a 3 X 2 X 2 ANOVA of posttest scores partitioned by Need for Achievement will be done. Its analytic paradigm will contain posttest scores in the cells. Possible interactions between Need for Achievement and Trained or Untrained and Pretested or Unpretested will all be assessed for significance.

	TRAINED		UNTRAINED	
	PRETESTED	UNPRETESTED	PRETESTED	UNPRETESTED
HI N.A.				
MED N.A.				
LO N.A.				

CHAPTER IV

RESULTS

INTRODUCTION

This chapter analyzes the results of the study. It begins by examining the issue of comparability of groups, the overall sample with Hamburger University Group norms and then the homogeneity of the four sample subgroups. A sequential treatment of each of the eleven hypotheses is undertaken and statistical results related to each are presented.

INITIAL COMPARABILITY OF GROUPS

As previously discussed in Chapter III, the method of
selecting A.O.C. Classes 352 and 354 as the sample raises
the issue of comparability of groups. In addition, the
validity of the analytical procedures used with the Solomon
4-Group design is, in part, dependent upon initial compar-
ability of the subjects in the various groups relative to
the content of the course. The process used by Hamburger
University to register students to attend class insures
that this comparability generally exists. Certain "en-
trance requirements" specify that students have completed
levels of McDonald's field training, both classroom and
on-the job. Students must demonstrate a criterion know-
ledge level as measured by a passing score (80 per cent) on
a field-administered Entrance Exam. Table 3 illustrates
the strong similarities between the sample selected for
this study (Classes 352 and 354) and existing H.U. norms,
among several demographic variables. In addition, Pretest
mean comparisons were done on Trained versus Untrained
groups on Knowledge, Attitude and Behavior outcome mea-
sures. These comparisons attempted to detect if there were
any significant differences in the Pretest scores between
these groups. As indicated in Table 4, no significant

Table 3

Comparison of Demographic Data Between Hamburger
University's Student Population Norms and Sample Groups'

VARIABLE	NORMS	SAMPLE(N=263)
MCOPCO vs LISCENSEE	27% VS 73%	33.5% VS 66.5%
MALE vs FEMALE	57% VS 43%	65% VS 35%
JOB TITLE:		
STORE MANAGERS	51.4%	49%
FIRST ASSISTANTS	47.7%	38%
REGISTERED APPLICANTS	.9%	5%
OTHER		8%
EDUCATION (TOT. YEARS)	14.2 YEARS	13.8 YEARS
PRETEST SCORE	54.20%	55.38%
TOTAL POINTS EARNED	674	679

Table 4

Pretest Mean Comparisons Testing For Differences
In Trained and Untrained Groups on Knowledge (K),
Attitude (A), and Behavior (B) Measures.

Comparison		N	MEANS	t	P
Trained vs Untrained	K	63 vs 43	54.63 vs 56.47	.88	N.S.
(PTP & UTP) vs (PUP & UUP)	A	63 vs 42	85.27 vs 89.33	1.91	N.S.
	B	54 vs 51	6.82 vs 7.12	1.35	N.S.

pretest differences were detected as a function of group
assignment.   These comparisons establish the initial
comparability of the groups.

MAIN RESULTS

The asymetrical nature of the Solomn 4-Group design precludes utilizing all six sets of scores (pretests and posttests) in a single analysis (Campbell and Stanley, 1963). The accepted analytical procedure is to disregard the pretest except as an additonal treatment classification variable (pretested or not pretested) and to conduct a 2 X 2 analysis of variance on the four sets of posttest scores. This analysis was further complicated by the existence of three types of posttest scores: Knowledge, Attitude, and Behavior. Six sets of means (two pretest and four posttest) were used for each type of outcome measure (Knowledge, Attitude, and Behavior) to evaluate the effectiveness of the training and to determine the extent of evaluation contamination due to pretesting. The means, standard deviations, and sample sizes of the pretest and posttest scores of the four groups for each of the three outcome measures appear in Table 5.

Main Effect of Training. The efficacy of training on Knowledge, Attitude, and Behavior outcome measures was tested in four separate comparisons of pretest and posttest means. These mean comparisons represent the hypothesized relationships contained in Hypotheses 1-4.

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Table 5

Means, Standard Deviations, and Sample Sizes of Pretest and Posttest Scores

Group	Knowledge		Attitude		Behavior	
	Pre	Post	Pre	Post	Pre	Post
1*	X=54.64	X=91.57	X=85.27	X=90.86	X=6.81	X=7.57
	SD=8.87	SD=9.72	SD=10.59	SD=8.28	SD=1.19	SD=1.12
	N = 63	N =65	N =63	N =65	N= 53	N =19
2*	N.A.	X=91.43	N.A.	X=91.77	N.A.	X=7.63
		SD=8.84		SD=7.23		SD=1.21
		N =67		N =66		N =33
3*	X=56.47	X=58.00	X=89.33	X=89.30	X=7.12	X=7.35
	SD=12.52	SD=9.94	SD=10.77	SD=10.05	SD=1.10	SD=1.34
	N =43	N =71	N =42	N =71	N =51	N =53
4*	N.A.	X=55.12	N.A.	X=89.20	N.A.	X=6.93
		SD=13.15		SD=6.76		SD=1.04
		N =57		N =55		N =36

* Group 1 = Pretested, Trained, Posttested (N=65)
  Group 2 = Unpretested, Trained, Posttested (N=68)
  Group 3 = Pretested, Untrained, Posttested (N=73)
  Group 4 = Unpretested, Untrained, Posttested (N=57)

The results of these mean comparisons are illustrated in
Table 6. The posttest means of those trained were
significantly higher than the comparable pretest mean
(Comparisons 1 and 4/Hypotheses 2 and 5). Additionally,
the mean posttest scores of trained subjects were sig-
nificantly higher than those of the untrained subjects
for most of the outcome measures (Comparisons 2 and 3/
Hypotheses 3 and 4). The exceptions are the Attitude and
Behavior posttest means for Pretested-Trained-Posttested
subjects versus the Pretested-Untrained-Posttested sub-
jects. The overall results of these comparisons demon-
strate a positive main effect due to the Advanced Opera-
tions Course (A.O.C.). Null hypotheses 2, 4, and 5 are
thus rejected. Hypothesis 3 is rejected for the Knowledge
outcome measure, but cannot be rejected for the Attitude
and Behavior measure. At this stage of the analysis, the
lack of significance could be suggesting that there is some
type of pretest effect for trained versus untrained
subjects. The differences in pretest and posttest
performance of the experimental (Trained) and control
(Untrained) groups are presented graphically in Figures 1,
2, and 3. Pretest estimates plotted for the unpretested
groups (UPT and UUP) were derived by taking the average of
the pretest scores of the pretested groups (PTP and PUP).

Main Effect of Pretesting. The main effect of pretesting
for trained subjects was evaluated by comparing the

Table 6

Pretest-Posttest Mean Comparisons Testing for the Main
Effect of Training on Knowlegde (K), Attitude (A), and
Behavior (B) Outcomes

Comparison	$\overline{X}$		T	P
1.PTP Posttest >	K-91.57 vs 54.64		38.06	<.01
PTP Pretest	A-90.86 vs 85.27		3.08	<.01
(Y2 > Y1)	B- 7.57 vs 6.81		2.73	<.05
2.PTP Posttest >	K-91.57 vs 58.00		19.89	<.01
PUP Posttest	A-90.86 vs 89.30		.99	N.S.
(Y2 > Y4)	B- 7.57 vs 7.35		.70	N.S.
3.UTP Posttest >	K-91.43 vs 55.12		17.72	<.01
UUP Posttest	A-91.77 vs 89.20		2.02	<.05
(Y5 > Y6)	B- 7.63 vs 6.93		2.60	<.05
4.UTP Posttest >	K-91.43 vs 56.47		12.49	<.01
PUP Pretest	A-91.77 vs 89.33		3.08	<.01
(Y5 > Y3)	B- 7.63 vs 7.12		1.70	<.01

Figure 1. Pretest to Posttest Changes in Mean Score
Performance on Knowledge Measures

* This point represents the estimated Pretest Means
  for the Unpretested groups obtained by averaging the
  scores of the Pretested groups.
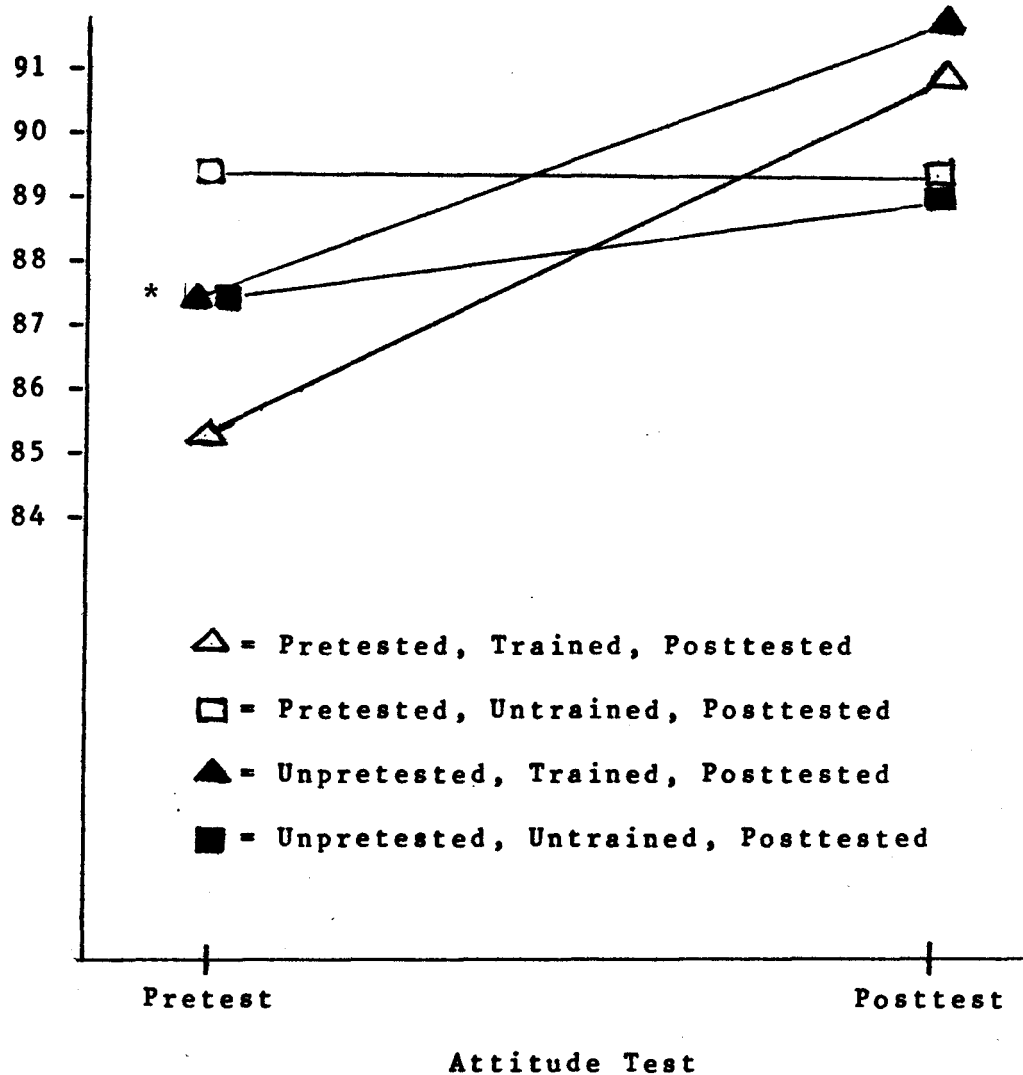
Figure 2. Pretest to Posttest Changes in Mean Score
Performance on Attitude Measures.

* This point represents the estimated Pretest mean for
  the Unpretested groups obtained by averaging the
  scores of Pretested groups.
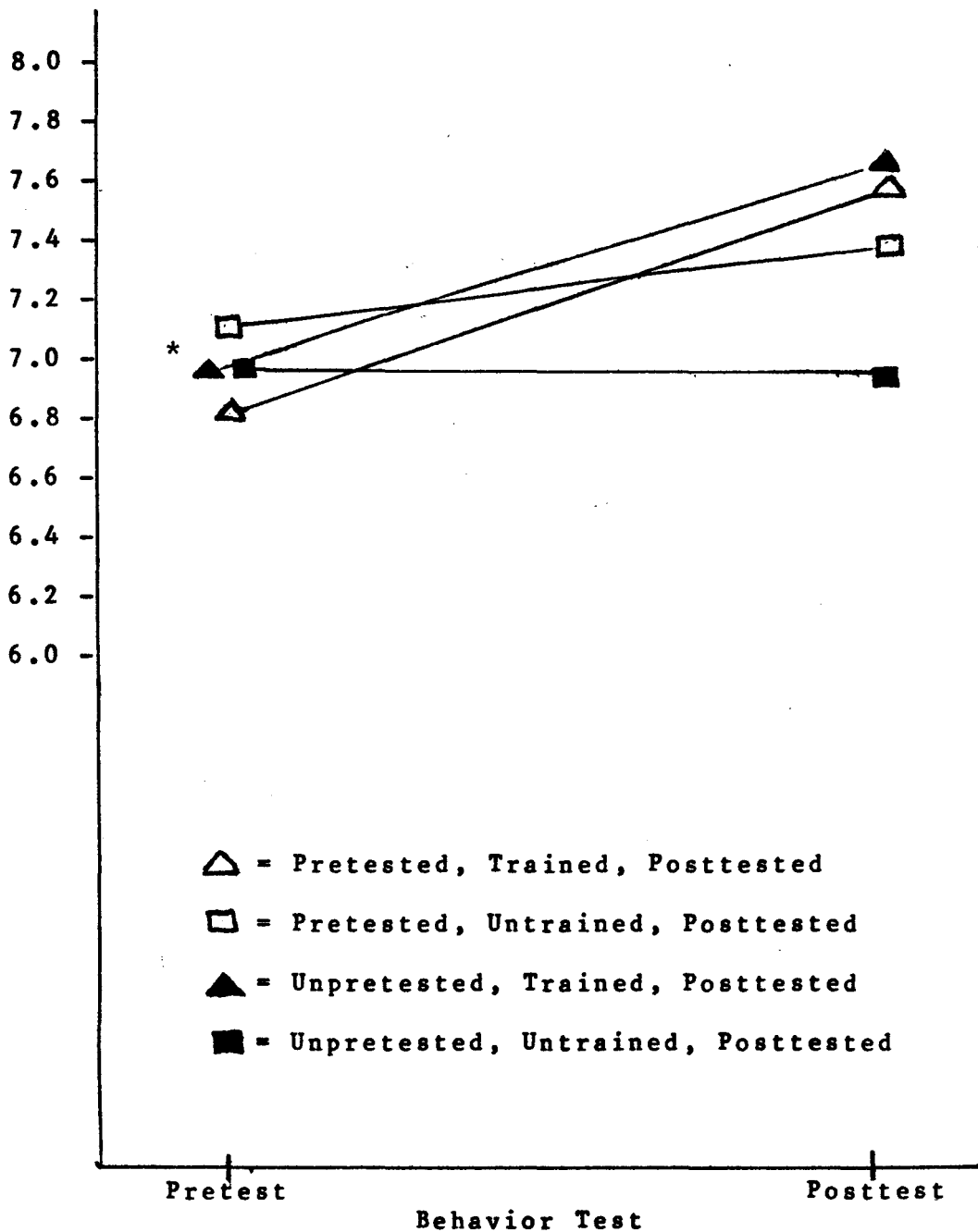
Figure 3. Pretest to Posttest Changes in Mean Score
Performance on Behavior Measures.

* This point represents the estimated Pretest mean for the
  Unpretested groups obtained by averaging the scores of
  Pretested groups.

posttest mean of the Pretested-Trained group (PTP) with that of the Unpretested-Trained group (UTP), Hypothesis 7. A similar comparison for Untrained subjects was made between the means of the Pretested-Untrained group (PUP) and the Unpretested-Untrained group (UUP), Hypothesis 8. The results of these two comparisons for the three outcome measures are presented in Table 7.

Failure to reject the null hypothesis of equality of posttest scores in comparison (1) for all three outcome measures indicates that pretesting had no significant impact on the posttest performance of the trained subjects. Similarly, the results of comparison (2) indicate an absence of pretest effects in the posttest performance of untrained subjects.

Pretest X Training Interaction.   An estimate of Pretest X Training interaction effects was provided by comparing the main Pretest effect for trained subjects (PTP Posttest - UTP Posttest) with the Pretest effect for untrained subjects (UUP Posttest - PUP Posttest). This calculation was done for all three outcome measures. A difference between the two Pretest main effects would have been suggestive of a Pretest X Training interaction in that it would indicate that the pretest had differential effects on posttest performance, depending on whether or not the training had been received. Table 8 contains the results. Differences were -2.74, -0.19, and +0.36 for Knowledge,

Table 7

Pretest-Posttest Mean Comparisons Testing for the
Main Efffect of Pretesting on Knowledge (K),
Attitude (A), and Behavior (B) Outcome Measures.

Comparison	$\bar{X}$	t	P
(1) PTP Posttest = UTP Posttest	91.57 vs 91.43	K = 0.08	N.S.
	90.86 vs 91.77	A = 0.67	N.S.
	7.57 vs 7.63	B = 0.19	N.S.
(2) PUP Posttest = UUP Posttest	58.00 vs 55.12	K = 1.37	N.S.
	89.30 vs 89.20	A = 0.06	N.S.
	7.35 vs 6.93	B = 1.67	N.S.

Table 8

Pretest Effect On Trained vs Untrained Subjects by
Subtraction of Posttest Means for Knowledge (K),
Attitude (A), and Behavior (B) Outcome Measures.

Mean Comparisons	Outcome	Difference
((PTP - UTP) - (UUP - PUP)) ((91.57-91.43)-(58.00-55.12))	K	-2.74
((90.86-91.77)-(89.30-89.20))	A	-0.19
((7.57 - 7.63)-(7.35 - 6.93))	B	+0.36

Attitude, and Behavior outcomes respectively. None of
these differences appear to be significant, thus indicating
that an interaction between Pretesting and Training is not
evident based on an analysis of the mean data. This obser-
vation will be confirmed later through the lack of a
significant F value in the analysis of variance.

ANALYSIS OF VARIANCE OF POSTTEST SCORES

The recommended procedure for use in analyzing the six sets of means, given initial comparability of groups, is to perform a 2 X 2 analysis of variance on the posttest scores with "presence or absence of training" and "presence or absence of the pretest" as treatment variables.

Sample sizes in the four groups of posttest scores in the present study differed slightly due to factors unrelated to the treatment variable, primarily attrition. (PTP n=65, UTP n=67, PUP n=71, UUP n=57). Since the differences in cell frequencies were not considered to be treatment related, an analysis of variance using unweighted means was performed on the data for each of the outcome measures, allowing each treatment mean to contribute equally to the sums of squares for treatments. Summary data from this two-way ANOVA are presented in Table 9.

The results of this ANOVA supported the conclusions drawn from the results of the mean comparison analyses. There was a strong positive main effect for training, Trained subjects scoring higher than Untrained subjects on all three outcome measures of Knowledge, Attitude, and Behavior. There was no evidence of a main effect for pretesting and no Pretest X Training interaction effect.

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Table 9

Analysis of Variance of Posttest Scores for
Knowledge, Attitude, and Behavior Outcomes

Source	ss	df	MS	F	P
Knowledge					
Main Effects					
Training	78723.625	1	78723.625	725.133	.000*
Pretesting	141.066	1	141.066	1.299	.255
Interaction Effect					
Pretesting X					
Training	121.280	1	121.280	1.117	.292
Within	27792.500	256	108.564		
Attitude					
Main Effects					
Training	265.615	1	265.615	3.878	.05*
Pretesting	11.328	1	11.328	0.165	.685
Interaction Effect					
Pretesting X					
Training	16.145	1	16.145	0.236	.628
Within	17326.512	253	68.484		
Behavior					
Main Effects					
Training	0.076	1	0.076	5.185	.024*
Pretesting	0.021	1	0.021	1.423	.235
Interaction Effect					
Pretesting X					
Training	0.017	1	0.017	1.135	.289
Within	2.007	137	0.015		

*Significant at $p < .05$

Thus, null Hypothesis 1, no statistically significant difference between Trained and Untrained subjects, is rejected.

NEED FOR ACHIEVEMENT

To explore the effect of Need for Achievement, a three-way analysis of variance was performed on the Knowledge, Attitude, and Behavior Posttest scores to assess whether Need for Achievement acts to moderate or mask simple Pretest effects and/or Pretest X Training interactions. (Bunker found such a relationship between numerical aptitude and Pretest X Training). Need for Achievement was categorized into three levels and added to the two independent variables utilized in the previous 2 X 2 ANOVA (Pretesting X Training), yielding a 3 X 2 X 2 design.

Need for Achievement scores were available on 192 subjects. Though the Need for Achievement test was administered to all subjects, 71 students (27 per cent) elected not to record their student numbers, thereby protecting their anonymity. This decision rendered their test results unusable. Table 10 indicates the raw score ranges that were utilized to categorize the scores. The ranges were determined by simply dividing the entire group into three roughly equal sub-groups.

Since assignment to treatment groups was done without knowledge of the Need for Achievement variable, it was

Table 10

Raw Score Ranges and Number of Subjects
for Category Scores on the EPPT

Category	Raw Score Range	N
High	79-99	60
Medium	50-74	72
Low	2-47	60

impossible to balance the size of the cell frequencies. This problem was further complicated by the fact that posttest measures were collected by mail and there were missing data on subjects who failed to mail their post-tests.

Tables 11-A, B, and C are a summary of the results of the three-way ANOVA for all three measures. For the Behavior outcome measure, there is a significant main effect for both Need for Achievement and Training. There is also a significant Need for Achievement X Training interaction. This finding suggests that Need for Achievement acts to moderate the impact of Training on Behavior Posttest scores. Table 12 contains the sample sizes and posttest means of Behavior scores for each of the 6 cells in the 3 X 2 matrix for the Training X Need for Achievement interaction. A plot of this two-way interaction is presented in Figure 4. It is apparent from this figure that there was virtually no difference between the posttest performance on the behavior measure for Medium Need for Achievement subjects in both Trained and Untrained subjects. In fact, Untrained subjects scored slightly higher. In both the High and Low Need for Achievement conditions, however, Trained subjects scored higher than Untrained subjects.

Hypothesis 9 requires an investigation into the relationship between Need for Achievement and Academic

Table 11-A

Analysis of Variance of Posttest Scores
Partitioned by Need for Achievement Level
For Knowledge Outcome Measures

Source	ss	df	MS	F	P
Main Effects					
N.A.*	346.559	2	173.279	1.752	.176
pretesting	454.004	1	454.004	4.592	.033
Training	56282.719	1	56282.719	569.208	.000**
Interaction					
N.A. X Training	392.634	2	196.317	1.985	.195
N.A. X Pretesting	13.67	2	6.836	0.069	.933
Pretesting X Training	167.229	1	167.229	1.691	.282
N.A. X Pretesting X Training	337.630	2	168.815	1.707	.184
Within	17699.332	179	98.879		

* Need for Achievement
** Significant at $p < .01$

Table 11-B

Analysis of Variance of Posttest Scores Partitioned by Need for Achievement Level For Attitude Outcome Measures

Source	ss	df	MS	F	P
Main Effects					
N.A.*	379.015	2	189.508	2.842	.061
Pretesting	0.364	1	0.364	0.005	.941
Training	55.890	1	55.890	0.838	.361
Interaction					
N.A. X Training	214.181	2	107.090	1.606	.204
N.A. X Pretesting	162.559	2	81.280	1.219	.298
N.A. X Pretesting X Training	122.420	2	61.210	0.918	.401
Within Cell	11867.941	178	66.674		

* Need for Achievement

Table 11-C

Analysis of Variance of Posttest Scores
Partitioned by Need for Achievement Level
For Behavior Outcome Measures

Source	ss	df	MS	F	P
Main Effects					
N.A.*	87487.000	2	43743.500	3.478	.035**
Pretesting	27544.141	1	27544.141	2.190	.142
Training	64313.859	1	64313.859	5.114	.026**
Interaction					
N.A. X Training	157760.938	2	78880.438	6.272	.003**
N.A. X Pretesting	46903.043	2	23451.520	1.865	.161
Pretesting X Training	2894.990	1	2894.990	0.230	.632
N.A. X Pretesting X Training	5595.250	2	2797.625	0.222	.801
Within	1207382.000	96	12576.895		

* Need for Achievement
** Significant at p < .05

Table 12

Cell Frequencies and Posttest Means for
the 2 X 2 ANOVA on Behavior Posttest Scores

Levels of N.A.	Trained	Untrained
Low N.A.	n=7 X=8.30	n=22 X=6.40
Medium N.A.	n=16 X=7.34	n=33 X=7.61
High N.A.	n=14 X=7.50	n=16 X=6.86
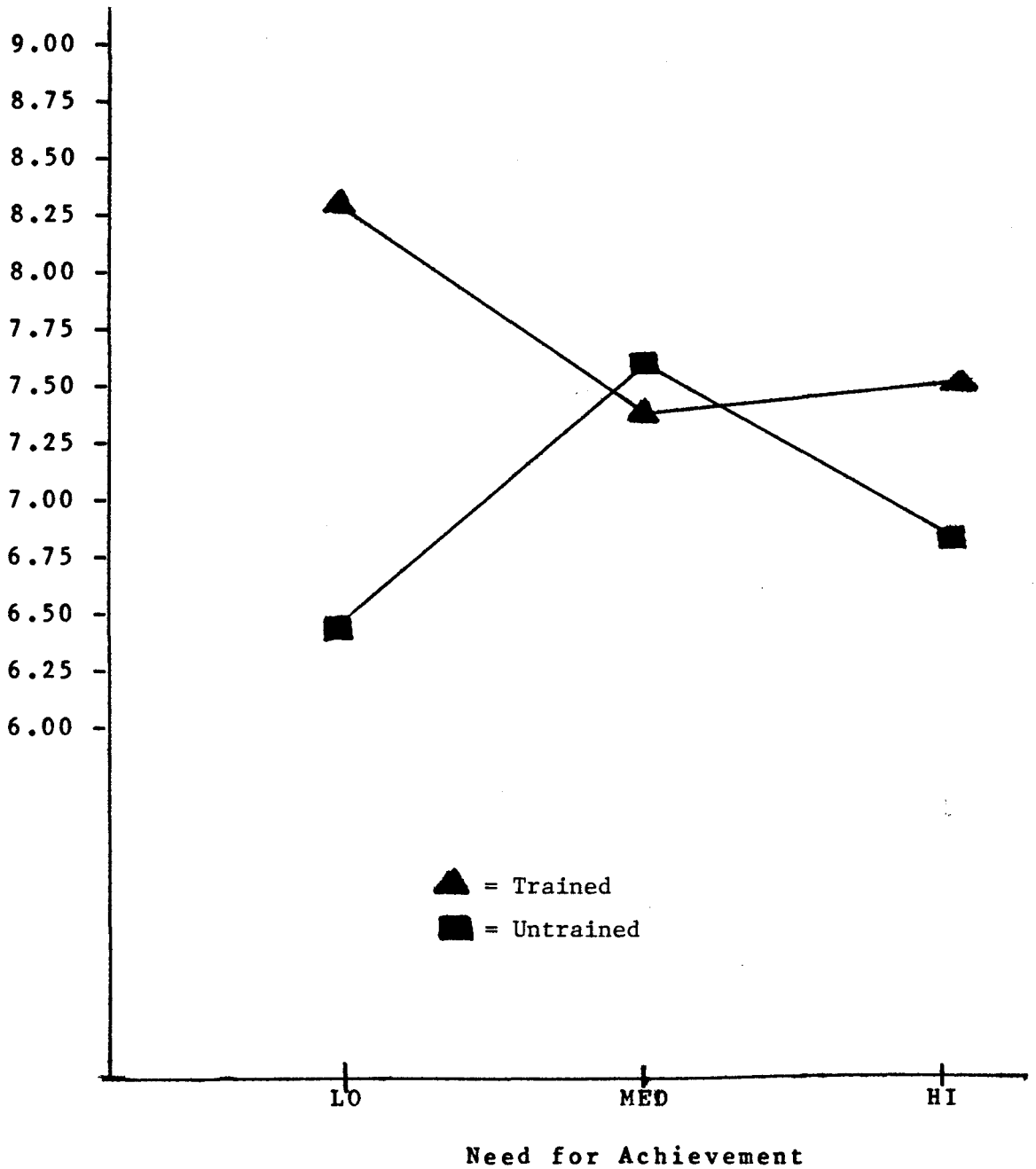
Figure 4. Behavior Posttest Score Interactions
Plotted by Training Level For Each
Need for Achievement Category.

Achievement (Total Points Earned). Table 13 indicates the results of an analysis of variance between these two variables which indicates a significant main effect. In further analyzing Total Points Earned by the three Need for Achievement levels, Table 14 indicates that the mean raw scores are higher for each successive level. High N.A. subjects did significantly better than Low N.A. subjects (694.65 versus 669.37). This difference is significant at the .01 level. Therefore, the null hypothesis that there is no statistically significant relationship between Need for Achievement and Academic Achievement must be rejected.

Table 13

Analysis of Variance of Academic Achievement
(TOT) by Need for Achievement (EPPT)

Source	ss	df	MS	F	P
Main Effects Need for Achievement (EPPT)	19320.965	2	9660.480	3.426	.035*
Within	532895.563	189	2819.53		

*Significant at p < .05

Table 14

Means, Standard Deviations for Academic
Achievement (TOT) Classified by Need for
Achievement Level (EPPT)

Level	$\bar{X}$	S.D.	n
High Need for Achievement	694.65	49.31	60
Medium Need for Achievement	680.22	52.95	72
Low Need for Achievement	669.37	55.59	60

INDIVIDUAL DIFFERENCE VARIABLES

The significance of the individual difference vari-
ables of Education (number of years of formal schooling)
and Type (category of subject employment - whether in a
company-owned or licensee restaurant) on outcome measures,
Hypothesis 10, was investigated through an analysis of
variance of posttest scores for each of the three outcome
measures. The results, found in Table 15, indicate a
significant relationship only between Education and
posttest measures of Attitude. However, an analysis of
variance of Total Points Earned (Academic Achievement) by
Education and Type, indicates a highly significant (<.01)
relationship between Education and Total Points Earned,
as seen in Table 16. Thus, null Hypothesis 10 is rejected.

Post-training versus 45-day post-training measures.
Hypothesis 11 deals with the retention of Knowledge,
Attitude, and Behavior gains over time. To test these
relationships, comparisons were made between Pre, Post, and
45-Day Post measures of Knowledge and Attitude. The
difficulties posed by collection of data by mail, the
length of time involved in the completion of the Behavior
instruments required of those who were asked to complete

Table 15

Analysis of Variance of Posttest Scores
By Education Level and Type of Employment
For Knowledge, Attitude, and Behavior Outcomes

Source	ss	df	MS	F	P
Knowledge					
Main Effects					
Education	5170.488	8	646.311	1.548	.142
Type	1296.331	2	648.166	1.553	.214
Interaction					
Education X					
Type	964.815	7	137.831	0.330	.940
Within	96836.000	232	417.396		
Attitude					
Main Effects					
Education	1184.893	8	148.112	2.197	.029*
Type	82.759	2	41.380	0.614	.542
Interaction					
Education X					
Type	212.930	7	30.419	0.451	.869
Within	15505.461	230	67.415		
Behavior					
Main Effects					
Education	40673.516	7	5810.500	0.379	.913
Type	1402.509	1	1402.509	0.091	.763
Interaction					
Education X					
Type	116588.313	6	19431.383	1.267	.277
Within	1885834.000	123	15331.980		

*Significant at $p < .05$

Table 16

Analysis of Variance of Total Points Earned
By Education Level and Type of Employment

Source	ss	df	MS	F	P
Main Effects					
Education	86244.938	10	8624.492	3.042	.001*
Type	2659.582	1	2659.582	0.938	.334
Interaction					
Education X					
Type	19087.406	8	2385.926	0.842	.567
Within	787478.313	256	3076.087		

*Significant at p < .01

them, and the perceived difficulties in differentiating
behavior changes in such a short time (six weeks) by
individuals who are not normally in daily contact with the
subjects, all combined to influence the researcher to omit
the data collection of 45-day post behavior measures.
Table 17 contains the means, standard deviations, and
sample sizes of pre and posttest scores of Knowledge and
Attitude measures for Trained subjects. Using this data,
paired mean comparisons were made. As seen in Table 18,
all post versus pre measures are significant at the .01
level. The 45-day post versus post and pre comparisons
show a significant difference still exists for knowledge
but not for attitude. Several factors may account for
these results, each of which will be discussed in Chapter
V.

Table 17

Means, Standard Deviations, and Sample Sizes of
Pre and Posttest Scores of Knowledge and
Attitude Measures for Trained Subjects.

Outcome	Pretest	Posttest	45-Day Posttest
Knowledge	X=54.64 SD=8.70 N=63	X=91.50 SD=9.38 N=133	X=86.42 SD=9.03 N=53
Attitude	X=85.27 SD=10.59 N=63	X=91.32 SD=7.75 N=131	X=90.42 SD=9.35 N=53

Table 18

Pretest, Posttest, 45-Day Posttest Paired Mean
Comparisons Testing For Retention of Gains in
Knowledge and Attitude Outcomes

Comparison	n	Means	SD	t	P
K Post	63	92.19	8.62	38.06	<.01
vs		vs	vs		
K Pre		54.63	8.87		
K Post 45	20	85.27	9.27	-2.13	<.05
vs		vs	vs		
K Post		90.64	12.01		
K Post 45	20	85.30	9.30	14.56	<.01
vs		vs	vs		
K Pre		54.60	9.32		
A Post	63	90.76	8.36	3.08	<.01
vs		vs	vs		
A Pre		85.27	10.59		
A Post 45	24	90.75	10.33	0.49	N.S.
vs		vs	vs		
A Post		90.33	8.91		
A Post 45	22	90.55	10.68	0.76	N.S.
vs		vs	vs		
A Pre		88.27	10.46		

CHAPTER V

DISCUSSION

The major purpose of this study was to address the problem of how to best design and implement an evaluation of a specific training program. The selected training program is the final step in a highly systematic series of training experiences designed to prepare trainees to successfully manage a McDonald's restaurant. The main hypothesis for the study was aimed at assessing the effectiveness of the training course by comparing pre and post measures of three separate outcomes: Knowledge, Attitude, and Behavior. In addition, hypotheses testing the relationship between several individual difference variables and their impact on training outcomes and the effectiveness of training over time were investigated. It is clear from the data presented that the completeness of information derived from an evaluation of a training program can vary depending upon the level of evaluation chosen to analyze training outcomes.

VERIFICATION OF THE IMPACT OF TRAINING

The most typical form of training evaluation, when it is conducted at all, is the measurement of pretest to posttest performance change on the relevant dimension(s) for a trained group only. In the present study, an analysis of the mean data for the PTP subjects is analagous to this single-group evaluation design. The significant pre-post change reported for these Pretested-Trained-Post-tested subjects (see Table 5) supports the efficacy of the training experience at this level of evaluation.

At one level higher in the evaluation heirarchy, a pretested-untrained control group (PUP) is added to the design. The results of this extra control group add greater credibility to the contention that a main effect for training was responsible for the pre-post improvement of the trained subjects (PTP). The significant difference between the posttest scores of the Pretested-Trained and Pretested-Untrained subjects (see Table 5), and the absence of a significant difference between Untrained subject's pretest and posttest means, suggests that PTP subjects benefitted from the training received and not simply from the "Hawthorne Effect."

Comparisons involving the remaining means generated
by the 4-Group design provide a clear delineation of the
training main effect. With the exception of the attitude
and behavior comparisons on the Pretested-Trained versus
Pretested-Untrained groups, all other comparisons indicate
a main effect for training. Overall, on the basis of the
mean data, one would have to conclude that the Advanced
Operations Course had a significant positive impact on
the performance of trainees on Knowledge, Attitude, and
Behavior measures.

Similarly, the two-way ANOVA on the posttest scores
(see Table 9) for all three outcome measures verifies the
presence of a substantial main effect for training, and
identifies no contaminations involving pretesting that
would require qualification of the training impact.

The results of the three-way ANOVA on the posttest
scores for each outcome measure partitioned by Need for
Achievement, however, produced some mixed results. Here
a main effect was observed for training on the Knowledge
and Behavior outcome measures, but not the Attitude
measure. In addition, it was found that the Need for
Achievement variable, when partitioned into three levels,
interacts with training, with the posttest performance
of Medium Need for Achievement-Untrained subjects slightly
higher than Trained subjects at the same Need for Achieve-
ment level.

The successive levels of analysis afforded by the Solomon 4-Group Design consistently demonstrates a strong main effect for training for all three outcome measures. It was anticipated that some pretest sensitization effects were present in the Advanced Operations Course environment, particularly in light of the fact that all three pretest/posttest measures of Knowledge, Attitude, and Behavior were each identical forms of the same test. Additionally, there are several factors in the A.O.C. environment which were felt would be significant contributors to a pretest effect: 1)the emphasis on testing throughout the Advanced Operations Course creates a high awareness of the importance of doing well, 2) the practice of posting test scores, by student number, further heightens a sense of competition and pressure to perform among all students, and 3) the specific nature of the pretest could have targeted student attention to specific areas of the course, thus causing a misguided attention to a limited sample of training content presented throughout the course. As has already been seen, however, the analysis indicates that there was no significant pretest effect, even when including the Need for Achievement variable (Tables 9 and 11-A, B, and C).

INDIVIDUAL DIFFERENCE VARIABLES

Several individual difference variables were investigated in this study to assess their relationship to the Knowledge, Attitude, and Behavior outcomes. It was originally felt by the Hamburger University faculty that the single most important variable acccounting for excellent performance in the Advanced Operations Course was a strong motivation to do well, defined in this study as Need for Achievement. In addition to the factors cited above, the nature of the Hamburger University experience in McDonald's corporate culture brings added pressure on most students to perform well. Most students have already heard about the special awards given for outstanding academic achievement (the A.O.C. Archie) and the recognition received for finishing in the top 10 per cent of the class (the Dean's List). Some students are even told by their supervisors (or owner operators) that they will receive additional compensation if they win one of the awards. Finally, since Hamburger University has a twenty-year history, and all individuals in the company ultimately attend the Advanced Operations Course, there is often pressure placed on students to perform as well or better than those who have "come before."

In investigating the Need for Achievement variable, it was found that there was a strong relationship between this variable and Total Points Earned (TOT), also defined as Academic Achievement. An analysis of variance of these two variables yielded a significant F value (Table 13). To further investigate this relationship, mean scores for the Total Points Earned variable were analyzed for each of the three Need for Achievement levels: High, Medium, and Low. The raw score analysis indicates that each successively higher level of Need for Achievement had a corresponding increase in the mean TOT score (Table 14). The difference between High and Low was highly significant (.01). This type of relationship has been well documented in the general literature for students in more traditional academic settings, thus lending credence to these findings.

As has previously been indicated, the results of a three-way ANOVA on each outcome measure partitioned by three distinct levels of Need for Achievement (High, Medium, and Low) resulted in an interaction at the Medium level. It was found that the posttest performance of Trained subjects was slightly higher than Untrained subjects at the Medium Need for Acheivement level. (See Table 11-C and Figure 4). This is an unexpected outcome in that it was expected that regardless of Need for Achievement level, all of the other evaluation results would suggest that Trained subjects should score better on

the posttest than Untrained subjects. An analysis of the
cell frequencies for this analysis (Table 12) indicates
that there were twice as many Untrained subjects (n=33) as
there were Trained subjects (n=16) at the Medium Need for
Achievement level. The difference in mean scores of
these two groups is small, .37 (7.61 versus 7.34). It is
entirely possible that had the cell frequencies for this
analysis been more equivalent, this difference would not
have occurred. Since only Untrained Medium Need for
achievement subjects had higher Behavior Posttest scores,
there appears to be no rational explanation that would
explain why this is true at the Medium level and not
the High level. Thus, it is the researcher's conclusion
that these results are produced by the substantial
differences in cell frequencies and not by other factors.

The two other individual difference variables of
interest in this study were Education (number of years of
formal schooling) and Type (category of subject employment,
whether in a company-owned or licensee restaurant). A
previous study had indicated that these two variables might
be related to outcomes of the course. In an analysis of
variance of Education, Attitude, and Type with each of the
three outcome measures (Table 15), only Education and Atti-
tude were found to have a significant relationship. An
analysis of variance of Total Points Earned (Academic

Achievement) with the same individual difference variables
indicates a significant relationship between Education and
Total Points Earned. It was originally hypothesized that
there would be such a relationship (Hypothesis 10). Sever-
al factors related to a subject's level of education should
enhance his/her performance in the Advanced Operations
Course. These would include better note-taking skills,
more developed study habits, a greater familiarity with
one's own learning style, and more advanced test-taking
skills. That Education was strongly related to Total
Points Earned and not the Knowledge Posttest may be ex-
plained by the significant difference in these two varia-
bles. The Knowledge Posttest represents a single, fifty-
item multiple-choice test which tests some of the major
concepts of the course. The Total Points Earned variable
includes six separate multiple-choice tests, each one
focused on testing specific curriculum content areas of the
course. It also includes a 100-point faculty evaluation.
Thus, the Total Points Earned variable allows greater
latitude for the advanced learning and testing skills of
more-educated A.O.C. Students to positively impact results.

The relationship between Education and Attitude
Posttest measures is an interesting and unexpected one.
Students with higher levels of education scored higher
on the Attitude Posttest than students with lower levels
of education. Though it is speculative, the researcher's

own experience as a faculty member at Hamburger University
suggests the following explanation. AOC students with
higher levels of education come to Hamburger University
with some pre-conceived notions about what to expect based
on their previous, more traditional educational experi-
ences. Two common reactions to the A.O.C.experience
which are shared by graduates regardless of their level
of education are: 1) they are highly impressed by the
quality of the curriculum, the sophistication of the
Hamburger University learning facility, its array of
"high tech" classroom audio-visual equipment and working
equipment labs, the professionalism and expertise of
the faculty, and 2) they are highly appreciative
of the knowledge and skills that they acquire during the
course which they will be able to apply back on the job
to become more effective restaurant managers. The
combination of these two factors creates an expressed
positive attitude toward McDonald's Corporation and
Hamburger University. Students with higher levels of
education, and thus more exposure to traditional
educational settings, are better able to appreciate the
quality and value of the course. This could account for
the significant relationship between Education and
Attitude. These findings are consistent with a study done
by Schien which found that education level was correlated

with a positive attitude change as a result of training.

Another issue of great interest in this study was to investigate whether the main effect that was hypothesized for training on the Knowledge, Attitude, and Behavior measures would persist over time. It was the original intent of the researcher to collect data on all three of these outcome measures immediately at the end of training and again forty-five days later. Several factors combined to make the data collection of the forty-five day Behavior Posttest nearly impossible:

1. The length of time required to complete these instruments coupled with the fact that they had to be completed by the subject's immediate supervisor, peer, and a subordinate made the entire data collection process more complicated and difficult.

2. In discussions with some of the Hamburger University faculty and with some of those individuals asked to complete the Behavior Index, it became obvious that forty-five days was too short a time period to differentiate behavior. Many of those asked to complete the Behavior Index are not normally in daily contact with the subjects,

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thereby making the differentiation between

observed behavior immediately after the course

and forty-five days later extremely difficult.

Thus, it was decided to eliminate data collection of

the forty-five day Behavior Index. As has been previously

discussed, all Post measures of Knowledge, Attitude, and

Behavior are significantly higher than their corresponding

Pretest measures. Paired mean comparisons were made on

both the Knowledge and Attitude measures. Comparisons were

made between forty-five day Posttest scores versus Posttest

scores, and forty-five day Posttest scores and Pretest

scores for each. (See Table 18). For the Knowledge out-

come measure, both comparisons were significantly

different. However, the raw score comparisons indicate

that there is some slippage in retention; K Pre = 54,

K Post = 92, and K Post 45 = 85. The slight differences in

raw scores in each comparison is a function of the unequal

"n's." Only 20 of the 63 Pretested-Trained-Postested group

returned their forty-five day Post knowledge test. Thus,

if can be concluded that the significant gain in knowledge

achieved by A.O.C. graduates does persist forty-five days

later, but at a lower level. These findings are consistent

with the well-documented findings in more traditional

academic settings that most learner's retention of learned

material decreases over time (Green, Bloom, and Kimball;

McGovern; and Underwood).

The raw scores for the Attitude measures for the PTP group are as follows: A Pre = 85, A Post = 90, A Post 45 = 90. There is a significant difference between the pre and posttest scores as seen in Table 18. However, the scores on the forty-five day Attitude posttest and the posttest administered at the end of the course are nearly identical, 90.75 versus 90.33. Only 24 of the 63 PTP group returned forty-five day Attitude Posttests. The results of the forty-five day Posttest versus the Pretest comparison are somewhat misleading. The 22 students on which the paired comparisons were made had a higher attitude pretest mean score, 88.27, than did the larger (63) Pretested-Trained-Posttested group, whose mean pretest score was 85.27. (See Table 18). The raw score analysis, however, demonstrates that trained students have a more favorable attitude after training, based on a favorable response rate on the Attitude measure, and it remains at this same high level forty-five days later.

IMPLICATIONS OF THE STUDY

The main finding of this study is that the Advanced
Operations Course produces a significant main effect for
graduates, as measured by the change in pre versus post
measures of Knowledge, Attitude, and Behavior. Both the
Knowledge and Attitude gains still persist forty-five days
after the training course has ended. Obviously, McDonald's
Corporation has believed that the course provides a benefit
to the organization, as evidenced by the significant cap-
ital investment the company has made in the Hamburger
University facility and the Advanced Operations Course
curriculum. These findings serve to further document the
measurable results of the course and thus demonstrate that
a tangible return on the capital investment is being
realized.

Though not included as a part of the statistical
analysis for this study, both the Opinion Survey and the
Behavior Index generated a significant amount of data in
the form of comments by A.O.C. students themselves, and by
superiors, peers, and subordinates. Two observations can
be made about the general nature of these comments:

1. A.O.C. students reported that McDonald's training
   in general, and the A.O.C./Hamburger University

experience in particular, had a significant
positive impact on their attitudes toward them-
selves, their jobs, and the company.

2. Superiors, peers, and subordinates' comments
   generally referred to a noticeable increase in the
   A.O.C. graduate's level of enthusiasm about the
   job and a strong desire to implement new ideas
   and techniques to improve store operations.

These findings are highly consistent with the
"Reaction"-type evaluations that Hamburger University
faculty have had graduates complete at the end of the
course. Students consistently identify the course and
the experience as the "highlight of their McDonald's
career."

Peters and Waterman, in a study of America's best
run companies, selected McDonald's Corporation as one
of the best. Among the traits and characteristics they
found common to most of the "excellent" companies was a
strong corporate culture and shared values, a key to uni-
fying the social dimensions of the organization. They
cited a list of dominant beliefs among the excellent com-
panies, which include:

1. A belief in being the best
2. A belief in the importance of the details of execu-
   tion, the nuts and bolts of doing the job well
3. A belief in the importance of people as individuals
4. A belief in superior quality and service

5. Explicit belief in and recognition of the importance of economic growth and profits. [60]

It seems clear in analyzing the data collected in this study that the content of the Advanced Operations Course and the experience of attending Hamburger University is a primary means by which McDonald's Corporation establishes a strong corporate culture and commitment to its values among its Restaurant Managers. The statistical evidence of this study indicates that the Advanced Operations Course has a significant effect on student's knowledge, attitude, and behavior.

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[60] Thomas J. Peters and Robert H. Waterman, In Search of Excellence (New York, 1982), p. 285.

INDICATIONS FOR FUTURE RESEARCH

The original intent of this study was to assess four
levels of training outcomes: knowledge, attitude, behav-
ior, and results, as prescribed in Kilpatrick's evaluation
model. The difficulties associated with trying to isolate
and measure specific in-restaurant results that could be
directly attributable to the Advanced Operations Course
prevented the researcher from including results measures in
the study. The data collection of in-restaurant measures
is further complicated by three other factors:

1. Students attending A.O.C. come from restaurants
   throughout the U.S. and the world, thus making
   in-restaurant follow-up and data collection more
   difficult.

2. Data collection in company-owned restaurants is
   much easier than in licensee restaurants because
   of the manner in which company restaurants are
   structured and controlled by the Corporation.
   However, A.O.C. students from company-owned
   restaurants represent only 27 per cent of the
   total student population.

3. It is possible that there may be more than one
   A.O.C. graduate working in the same McDonald's

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restaurant. This is more likely in licensee restaurants, therby confounding the impact of A.O.C. training.

These factors can be overcome, however, and it is recommended that further research be done to investigate what specific in-restaurant benefits are derived. Potentially, the multi-baseline design would yield meaningful data if targeted at specific behaviors. Additionally, a longitudinal study which attempts to correlate A.O.C. training with sales, profit trends, and levels of customer service is strongly recommended.

A major area for further research as indicated by the literature review is the efficacy of various training methods. The Hamburger University Faculty presently utilizes a variety of training methods throughout the course; however, the dominant method is lecture. Further research needs to be done to investigate each of the alternate methods and their impact on cognitive and affective outcomes. Clearly, some topics may lend themselves more appropriately to alternate training methods. The sophistication and capacities of the present H.U. facility also argue for the testing of computer-based training (CBT) techniques as an alternate method of instruction.

SUMMARY

The purpose of the study was to design and implement an evaluation of an organizational training program and to assess multiple outcomes.

The program, the Advanced Operations Course, is offered by McDonald's Corporation at its corporate training center, Hamburger University. Utilizing the Solomon 4-Group design, 263 subjects were divided into four groups based on the Trained/Untrained and Pretested/Unpretested conditions. Instruments were designed to test knowledge, attitude, and behavior outcomes. The study also investigated the impact of the individual difference variables - Need for Achievement and Education level - and retention of the three outcomes over time.

The results of the study demonstrated a positive main effect for training on knowledge, attitude, and behavior outcomes. Forty-five days later, the knowledge effect was still present, though at a slightly lower level, while the attitude effect remained at the same post-training level. Need for Achievement and Education were found to be strongly correlated with overall academic achievement in the course, as were Education and Attitude.

Further research is indicated to investigate more
fully the benefits of the course, in terms of improved
restaurant operating results and in the efficacy of the
various training methods utilized throughout the training
program.

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APPENDIX A

NAME _____   A.O.C. CLASS # _____
S.S. # _____   TEST # _____

A.O.C. KNOWLEDGE TEST

This 50-item multiple choice test is designed to measure your general knowledge level of some of the subject matter included in the Advanced Operations Course taught at Hamburger University.

Please observe the following instructions:

1) Working alone, and with no other resources (Operations & Training Manual, Hamburger University Notebook, etc.) complete the test. Allow yourself 25-30 minutes.

2) Use the enclosed IBM Answer Sheet and a No. 2 lead pencil (no ink pens). Record one response for each of the 50 questions. Erasures should be as complete as possible. Be sure to fill in your name, social security number and A.O.C. class number on the answer sheet.

3) Use the enclosed postage-paid envelope to return both the test and the completed answer sheet to Hamburger University as soon as possible (within the next 3-5 days).

The validity of this test is based upon how well it measures your *individual* knowledge. Please observe the above instructions and then return *both* the test and the completed answer sheet to Hamburger University.

1. "The combined efforts of everyone is greater than the sum of the individual efforts" is called:

   A. Alliance
   B. Energy
   C. Group Dynamics
   D. Synergy

2. If a team was unable to reach agreement, chances are the objective was not clear; or the team failed to:

   A. Establish a list of rights
   B. Establish methods
   C. Identify a leader
   D. Place a time limit on the meeting

3. The time posts on the defrost clock indicate the:

   A. Beginning of the defrost cycle
   B. Correct time of day
   C. Failsafe settings
   D. All of the above

4. People who are successful in time management all have one thing in common:

   A. They make a daily 'to do' list
   B. They set time and motion goals
   C. They spend time away from the office
   D. They work less hours

5. The evaporator is the component that allows the refrigerant to change:

   A. From a gas
   B. To a gas
   C. To a high pressure gas
   D. To a liquid

6. Which term best describes time spent on those activities you want to do?

   A. Boss imposed
   B. Discretionary
   C. System imposed
   D. Subordinate imposed

7. What is the McDonald's recommended temperature for our restaurants in the summer months?

   A. 50° F (10° C)
   B. 60° F (15.5° C)
   C. 68° F (20° C)
   D. 78° F (25.5° C)

8. One of the four steps of training is "try out". This must include a demonstration of the task by the trainee. Why?

   A. To give basic instructions
   B. To provide practice
   C. To put trainee at ease
   D. To verify skills transfer

9. A team's "objective" is:

   A. Formal agenda or task
   B. How the team interacts
   C. Its process
   D. The act of processing

10. Ownership of feelings and expressing perceptions are key components in what part of team activity?

    A. Content
    B. Method
    C. Processing
    D. Task Accomplishment

11. White males that normally just help other white males to succeed in McDonald's are usually:

    A. Different in appearance from other employees
    B. Ingroup members
    C. Outgroup members
    D. Sensitive to outgroup members

12. The way you honestly feel about an outgroup member contributes to:

    A. Their attitude toward you
    B. Your behavior
    C. Your sensitivity
    D. All of the above

13. Your second assistant, although thoroughly trained, submits a crew schedule with errors. What form of training should be used?

    A. Advanced
    B. Corrective
    C. Enrichment
    D. Example

14. A question not to ask during the interview is:

    A. Do you own a car?
    B. How long will you work?
    C. Why did you leave your last job?
    D. Why work at McDonald's?

15. The major key to retention of our crew people is:

   A. A designated crew recruiter
   B. A good crew incentive program
   C. An organized crew training program
   D. Good communications

16. In situations that require equalizing baffles, their purpose is to:

   A. Extract grease from the air
   B. Prevent negative air flow
   C. Properly move air across the grill surface
   D. Provide positive air flow

17. An objective has four elements of measurability. Which one identifies how well it will be accomplished?

   A. Conditions
   B. Quality
   C. Quantity
   D. Time

18. The first step in the setting objectives process is setting the objective. What is the third step?

   A. Action Plan
   B. Goal Setting
   C. Performance Review
   D. Work Review

19. Which ego state (or part of one) is creative:

   A. Adapted parent
   B. Adult
   C. Natural child
   D. Nurturing child

20. Active listening is an indicator of which ego state?

   A. Adapted child
   B. Adult
   C. Critical parent
   D. Nurturing parent

21. When we say one thing, but mean something else, what type of transaction occurs?

   A. Crossed
   B. Diagram
   C. Parallel
   D. Ulterior

22. The goal of the nurturing parent is:

   A. To be accepted
   B. To be competent
   C. To be loved
   D. To be superior

23. For a stroke to be recorded it must be:

   A. Accepted
   B. Parallel
   C. Positive
   D. All of the above

24. At times, the adapted child can be:

   A. Competent
   B. Nurturing
   C. Rebellious
   D. Withdrawn

25. You're experiencing an overrun percentage of 40% in your sundaes, which of the following could be the cause?

   A. Air orifice too large
   B. Draw temperature too low
   C. The condition of the check bands
   D. The condition of the topping pumps

26. Self-contained thermostats are located in the:

   A. Blower compartment
   B. Return air duct
   C. Supply air duct
   D. Lobby

27. How often should the exhaust stacks in the grill area be cleaned?

   A. Every month
   B. Every 2 months
   C. Every 3 months
   D. Every 6 months

28. An exhaust fan v-belt that can be turned 270 degrees indicates:

   A. A loose belt
   B. An exhaust fan that runs slow
   C. An inefficient exhaust system
   D. All of the above

29. To achieve a 68° F (20° C) temperature in the store, the 68° F (20° C) temperature must be measured:

A. At head level standing in the kitchen
B. In the stockroom next to the perishables
C. Next to the rooftop condenser
D. Outside of the drive-thru window

30. The T-9 filter is designed to:

A. Filter undissolved impurities
B. Remove all minerals
C. Soften hard water
D. All of the above

31. Monthly turnover for August is 20%. I will need 75 people to handle the volume. How many people will I need to replace because of turnover?

A. 4
B. 12
C. 15
D. 60

32. Which of the following is not one of the four steps in the "how to" of delegation?

A. Communicate how and how well
B. Communicate what
C. Follow-up
D. Set priorities

33. Which of the following helps prevent lime build-up in the ice machine?

A. Booster Pump
B. Micromet Feeder
C. Solvent Remover
D. T-9 Filter

34. A store invested $800 in a promotion. The sales generated were $2700. According to L.S.M. guidelines regarding breakeven, this store has:

A. Achieved good public relations
B. Exceeded the guidelines
C. Met the guidelines
D. Not met the guidelines

35. How many parts are there to the adult ego state?

A. Four
B. Three
C. Two
D. One

36. On the large walk-in freezer the failsafe should be set for _____ from the beginning of the defrost cycle.

A. 30 minutes
B. 50 minutes
C. 55 minutes
D. 60 minutes

37. "We will conduct our team proceedings my way", is an example of a statement that would be made by a:

A. Topic Jumper
B. Non-Team Player
C. Rotating Leader
D. Team Member

38. Which three team roles are always negative?

A. Blocker Clown Dominator
B. Blocker Clown Informer
C. Blocker Dominator Topic Jumper
D. Blocker Judge Topic Jumper

39. If we receive a cold prickly, we should:

A. Accept the valid information
B. Accept the feeling
C. Reply with a cold prickly
D. Zilch the person

40. A Ronald McDonald appearance is a promotion that is designed to:

A. Reinforce an advertising promise
B. Solve an operational problem
C. Take advantage of kid's spendable income
D. Promote a new product

41. Overweight shakes can be caused by improper:

A. Checkbands
B. Priming
C. Syrup Calibration
D. All of the above

42. How should we lubricate the pressure switch diaphragm?

A. Lightly
B. Moderately
C. Heavily
D. Not at all

43. A person who functions predominantly from the parent ego state has a tendency to be a (an): A. Almost Winner B. Almost Loser C. Loser D. Winner	50. An Outgroup Member: A. Is excluded from Ingroup B. Is visibly different C. Wants to belong D. All of the above
44. To best manage the almost loser, you should use: A. Adapted Child B. Critical Parent C. Natural Child D. Nurturing Parent	
45. Which of the following is not an attribute of the "I'm OK - You're OK" person? A. Accepts delegation B. Feels equal C. Makes snap decision D. Never disagrees	
46. Which of the following will not result from a clogged condenser? A. Electricity usage B. Equipment Life Shortage C. Evaporator freeze-up D. Loss of efficiency	
47. A basic concept that applies to all refrigeration is: A. Cold items contract B. Heated items expand C. Heat travels to cold D. Pressure and heat have an inverse relationship	
48. In the sundae machine, what controls the mix pump? A. Beater Assembly B. Draw Gate Valve C. Poppet Valve Assembly D. Pressure Switch	
49. The primary benefit in using a crew recruiter is that it: A. Improves morale B. Increases QSC C. Increases turnover D. Saves money	

APPENDIX B

OPINION SURVEY

INSTRUCTIONS: Opinion surveys are used to help us understand how you feel about McDonald's and your job. Unlike the Attitude Surveys, which was generally used by McDonald's Corporation and its licensees as a basis for identifying areas which need improvements. This Opinion Survey is intended only to measure your opinions. No subsequent action on the results should be expected. To help us please complete this questionnaire.

HOW TO RESPOND: You will receive a separate answer sheet on which to record your responses. After reading each statement, select the response that best describes how you feel about the statement. Selecting the "?" indicates that:

—Sometimes you agree, sometimes you don't, or
—That you do not understand the question, or
—You are too new in McDonald's to have an opinion.

If your answer is **Yes** ...mark "A" on your answer sheet.
If your answer is **?** ...mark "B" on your answer sheet.
If your answer is **No** ...mark "C" on your answer sheet.

		YES	?	NO
		A	B	C
1.	The job I have allows me to improve my skills	___	___	___
2.	Our pay system is competitive	___	___	___
3.	I can have a satisfactory career in McDonald's	___	___	___
4.	I would recommend working for McDonald's to my friends.	___	___	___
5.	I am interested in my next possible job promotion	___	___	___
6.	McDonald's promotes from within	___	___	___
7.	My training is helping to develop me for future positions	___	___	___
8.	McDonald's is the best restaurant chain in the world.	___	___	___
9.	The people I work with are professional and competent and I enjoy working with them	___	___	___
10.	I understand McDonald's policies and procedures	___	___	___
11.	Evaluation of my learning would be more effective if it were done less frequently	___	___	___
12.	I feel proud to work for McDonald's	___	___	___
13.	I feel secure in my job at McDonald's	___	___	___
14.	I look forward to coming to work	___	___	___
15.	McDonald's has adequately trained me to do my job	___	___	___
16.	I prefer working for McDonald's over any other company I know	___	___	___
17.	McDonald's treats its employees as well or better than any company I know	___	___	___
18.	I see myself working for McDonald's 3 years from now	___	___	___
19.	I enjoy talking to family and friends about McDonald's and about my job	___	___	___
20.	I get angry when I see anti-McDonald's television commercials, newspaper stories, etc.	___	___	___
21.	It is important to me that I work for a "Number 1" company in it's industry	___	___	___
22.	McDonald's training activities have a positive affect on my attitude	___	___	___
23.	My attitude about McDonald's affects how well I do my job	___	___	___
24.	McDonald's cares a great deal about it's employees	___	___	___
25.	Acceptable job performance insures my security	___	___	___
26.	McDonald's is an excellent company to work for and I would recommend it to my friends	___	___	___
27.	My work gives me a sence of achievement	___	___	___
28.	I feel McDonald's menu items are superior in both quality and value to the competition's	___	___	___
29.	I enjoy being identified as an employee of McDonald's to family, friends or acquaintances	___	___	___

NOTE: The following demographic information will be usd to interpret and analyze results. Completion is optional. Select the appropriate letter on your answer sheet for each item.

30. My sex is: A. Male   B. Female
31. My job is: A. Store Manager   B. First Assistant   C. Registered Applicant   D. Staff   E. Other
32. My attitude about McDonald's is most affected by _____

_____

_____

_____

McD11908

APPENDIX C

CLASS # _____
S.S. # _____

MANAGER'S SUPERIOR ☐
ASSOCIATE ☐
SUBORDINATE ☐

McDonald's

MANAGEMENT BEHAVIOR INDEX

_____

Manager's Name

This index asks you to assess the behavior of the manager whose name appears above. It is to be completed anonymously, so please don't sign your name.

Your tendency may be to respond to these statements by subjectively evaluating the person. Instead, this instrument is intended to measure *BEHAVIOR* and its frequency. As you read each statement, ask yourself:

      A. Does this manager *BEHAVE* this way?

      B. How frequently have I observed this *BEHAVIOR*?

Your responses should be based on your direct work experience with this manager.

It may help to think of the five choices as frequency levels on a numerical scale from 10 (always) to 1 (never):

10	9	8	7	6	5	4	3	2	1
Always			Often		Occasionally		Seldom		Never

If you have never had the opportunity to observe the *BEHAVIOR* identified in a particular statement, use your judgment based on your knowledge of the manager and his/her normal behavior. Then circle the appropriate response.

Before you turn the page, please check the title in the upper right-hand corner of the page that describes your relationship to this manager.

BEHAVIOR	FREQUENCY

1. Treats all subordinates equally in applying store personnel practices.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

2. Effectively sets personal and store objectives.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

3. Effectively assists subordinates in preparing their personal and store-related objectives.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

4. Demonstrates the ability to apply a consistent and effective method for making decisions.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

5. Effectively sets store priorities.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

6. Uses appropriate group techniques to establish and maintain productive team process within the management team.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

7. Uses participative management, when appropriate, with the management team to identify and resolve store problems.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

8. Effectively identifies store training needs.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

9. Effectively manages all store training.

   A. Always 10
   B. Often 7
   C. Occasionally 5
   D. Seldom 3
   E. Never 1

BEHAVIOR	FREQUENCY

10.	Demonstrates personal time management skills in setting priorities, organizing time, and applying successful time management techniques. ("To Do" lists, planning calendar, etc.)	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never ....?................................ 1
11.	Effectively delegates tasks to subordinates, including appropriate follow-up.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
12.	Develops and successfully implements local store marketing programs.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
13.	Demonstrates the ability to effectively communicate with subordinates (verbally).	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
14.	Effectively provides positive verbal recognition when appropriate to create a motivational environment for each subordinate.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
15.	Effectively administers verbal reprimands and redirects subordinates' activities when necessary.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
16.	Effectively evaluates store crew staffing needs.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
17.	Maintains an on-going crew recruitment program.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1
18.	In dealing with all pieces of store equipment: a. Is familiar with basic component parts of each piece of equipment and how they function.	A. Always .... 10 B. Often .... 7 C. Occasionally .... 5 D. Seldom .... 3 E. Never 1

BEHAVIOR	FREQUENCY

18.

b. Can successfully troubleshoot equipment malfunctions and complete minor adjustments, small parts replacement, or repair.

A. Always 10
B. Often 7
C. Occasionally 5
D. Seldom 3
E. Never 1

c. Calls in service agencies for equipment repair only when truly needed.

A. Always 10
B. Often 7
C. Occasionally 5
D. Seldom 3
E. Never 1

d. Can correctly perform all planned maintenance activities on Planned Maintenance System and can properly demonstrate them to others.

A. Always 10
B. Often 7
C. Occasionally 5
D. Seldom 3
E. Never 1

19. Projects a positive attitude about McDonald's and the job of a Manager.

A. Always 10
B. Often 7
C. Occasionally 5
D. Seldom 3
E. Never 1

20. Use the space below to include any additional observations you may have regarding this manager's recent management behavior.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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_____

_____

_____

McD 12253

APPENDIX D

Edwards Personal Preference Schedule

Allen L. Edwards, University of Washington

DIRECTIONS

This schedule consists of a number of pairs of statements about things that you may or may not like; about ways in which you may or may not feel. Look at the example below.

> **A** I like to talk about myself to others.
> **B** I like to work toward some goal that I have set for myself.

Which of these two statements is more characteristic of what you like? If you like "talking about yourself to others" more than you like "working toward some goal that you have set for yourself," then you should choose A over B. If you like "working toward some goal that you have set for yourself" more than you like "talking about yourself to others," then you should choose B over A.

You may like both A and B. In this case, you would have to choose between the two and you should choose the one that you like better. If you dislike both A and B, then you should choose the one that you dislike less.

Some of the pairs of statements in the schedule have to do with your likes, such as A and B above. Other pairs of statements have to do with how you feel. Look at the example below.

> **A** I feel depressed when I fail at something.
> **B** I feel nervous when giving a talk before a group.

Which of these two statements is more characteristic of how you feel? If "being depressed when you fail at something" is more characteristic of you than "being nervous when giving a talk before a group," then you should choose A over B. If B is more characteristic of you than A, then you should choose B over A.

If both statements describe how you feel, then you should choose the one which you think is more characteristic. If neither statement accurately describes how you feel, then you should choose the one which you consider to be less inaccurate.

Your choice, in each instance, should be in terms of what you like and how you feel at the present time, and not in terms of what you think you should like or how you think you should feel. This is not a test. There are no right or wrong answers. Your choices should be a description of your own personal likes and feelings. Make a choice for every pair of statements; do not skip any.

The pairs of statements on the following pages are similar to the examples given above. Read each pair of statements and pick out the one statement that better describes what you like or how you feel. Make no marks in the booklet. On the separate answer sheet are numbers corresponding to the numbers of the pairs of statements. Check to be sure you are marking for the same item number as the item you are reading in the booklet.

If your answer sheet is printed in BLACK ink:	If your answer sheet is printed in OTHER THAN BLACK ink:
For each numbered item draw a circle around the A or B to indicate the statement you have chosen.	For each numbered item fill in the space for A or B as shown in the Directions on the answer sheet.

Do not turn this page until the examiner tells you to start.

1   **A** I like to help my friends when they are in trouble.
    B I like to do my very best in whatever I undertake.

2   **A** I like to find out what great men and women have thought about various problems in which I am interested.
    B I would like to accomplish something of great significance.

3   **A** Any written work that I do I like to have precise, neat, and well organized.
    B I would like to be a recognized authority in some job, profession, or field of specialization.

4   **A** I like to tell amusing stories and jokes at parties.
    B I would like to write a great novel or play.

5   **A** I like to be able to come and go as I want to.
    B I like to be able to say that I have done a difficult job well.

6   **A** I like to solve puzzles and problems that other people have difficulty with.
    B I like to follow instructions and to do what is expected of me.

7   **A** I like to experience novelty and change in my daily routine.
    B I like to tell my superiors that they have done a good job on something, when I think they have.

8   **A** I like to plan and organize the details of any work that I have to undertake.
    B I like to follow instructions and to do what is expected of me.

9   **A** I like people to notice and to comment upon my appearance when I am out in public.
    B I like to read about the lives of great men and women.

10   **A** I like to avoid situations where I am expected to do things in a conventional way.
    B I like to read about the lives of great men and women.

11   **A** I would like to be a recognized authority in some job, profession, or field of specialization.
    B I like to have my work organized and planned before beginning it.

12   **A** I like to find out what great men and women have thought about various problems in which I am interested.
    B If I have to take a trip, I like to have things planned in advance.

13   **A** I like to finish any job or task that I begin.
    B I like to keep my things neat and orderly on my desk or workspace.

14   **A** I like to tell other people about adventures and strange things that have happened to me.
    B I like to have my meals organized and a definite time set aside for eating.

15   **A** I like to be independent of others in deciding what I want to do.
    B I like to keep my things neat and orderly on my desk or workspace.

16   **A** I like to be able to do things better than other people can.
    B I like to tell amusing stories and jokes at parties.

17   **A** I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
    B I like to talk about my achievements.

18   **A** I like to have my life so arranged that it runs smoothly and without much change in my plans.
    B I like to tell other people about adventures and strange things that have happened to me.

20   **A** I like to criticize people who are in a position of authority.
    B I like to use words which other people often do not know the meaning of.

21   **A** I like to accomplish tasks that others recognize as requiring skill and effort.
    B I like to be able to come and go as I want to.

22   **A** I like to praise someone I admire.
    B I like to feel free to do what I want to do.

23   **A** I like to keep my letters, bills, and other papers neatly arranged and filed according to some system.
    B I like to be independent of others in deciding what I want to do.

24   **A** I like to ask questions which I know no one will be able to answer.
    B I like to criticize people who are in a position of authority.

25   **A** I get so angry that I feel like throwing and breaking things.
    B I like to avoid responsibilities and obligations.

26   **A** I like to be successful in things undertaken.
    B I like to form new friendships.

27   **A** I like to follow instructions and to do what is expected of me.
    B I like to have strong attachments with my friends.

28   **A** Any written work that I do I like to have precise, neat, and well organized.
    B I like to make as many friends as I can.

29   **A** I like to tell amusing stories and jokes at parties.
    B I like to write letters to my friends.

30   **A** I like to be able to come and go as I want to.
    B I like to share things with my friends.

31   **A** I like to solve puzzles and problems that other people have difficulty with.
    B I like to judge people by why they do something—not by what they actually do.

32   **A** I like to accept the leadership of people I admire.
    B I like to understand how my friends feel about various problems they have to face.

33   **A** I like to have my meals organized and a definite time set aside for eating.
    B I like to study and to analyze the behavior of others.

34 A I like to say things that are regarded as witty and clever by other people.
    B I like to put myself in someone else's place and to imagine how I would feel in the same situation.

35 A I like to feel free to do what I want to do.
    B I like to observe how another individual feels in a given situation.

36 A I like to accomplish tasks that others recognize as requiring skill and effort.
    B I like my friends to encourage me when I meet with failure.

37 A When planning something, I like to get suggestions from other people whose opinions I respect.
    B I like my friends to treat me kindly.

38 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
    B I like my friends to feel sorry for me when I am sick.

39 A I like to be the center of attention in a group.
    B I like my friends to make a fuss over me when I am hurt or sick.

40 A I like to avoid situations where I am expected to do things in a conventional way.
    B I like my friends to sympathize with me and to cheer me up when I am depressed.

41 A I would like to write a great novel or play.
    B When serving on a committee, I like to be appointed or elected chairperson.

42 A When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.
    B I like to supervise and to direct the actions of other people whenever I can.

43 A I like to keep my letters, bills, and other papers neatly arranged and filed according to some system.
    B I like to be one of the leaders in the organizations and groups to which I belong.

44 A I like to ask questions which I know no one will be able to answer.
    B I like to tell other people how to do their jobs.

45 A I like to avoid responsibilities and obligations.
    B I like to be called upon to settle arguments and disputes between others.

46 A I would like to be a recognized authority in some job, profession, or field of specialization.
    B I feel guilty whenever I have done something I know is wrong.

47 A I like to read about the lives of great men and women.
    B I feel that I should confess the things that I have done that I regard as wrong.

48 A I like to plan and organize the details of any work that I have to undertake.
    B When things go wrong for me, I feel that I am more to blame than anyone else.

49 A I like to use words which other people often do not know the meaning of.
    B I feel that I am inferior to others in most respects.

50 A I like to criticize people who are in a position of authority.
    B I feel timid in the presence of other people I regard as my superiors.

51 A I like to do my very best in whatever I undertake.
    B I like to help other people who are less fortunate than I am.

52 A I like to find out what great men and women have thought about various problems in which I am interested.
    B I like to be generous with my friends.

53 A I like to make a plan before starting in to do something difficult.
    B I like to do small favors for my friends.

54 A I like to tell other people about adventures and strange things that have happened to me.
    B I like my friends to confide in me and to tell me their troubles.

55 A I like to say what I think about things.
    B I like to forgive my friends who may sometimes hurt me.

56 A I like to be able to do things better than other people can.
    B I like to eat in new and strange restaurants.

57 A I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
    B I like to participate in new fads and fashions.

58 A I like to have my work organized and planned before beginning it.
    B I like to travel and to see the country.

59 A I like people to notice and to comment upon my appearance when I am out in public.
    B I like to move about the country and to live in different places.

60 A I like to be independent of others in deciding what I want to do.
    B I like to do new and different things.

61 A I like to be able to say that I have done a difficult job well.
    B I like to work hard at any job I undertake.

62 A I like to tell my superiors that they have done a good job on something, when I think they have.
    B I like to complete a single job or task at a time before taking on others.

63 A If I have to take a trip, I like to have things planned in advance.
    B I like to keep working at a puzzle or problem until it is solved.

64 A I sometimes like to do things just to see what effect it will have on others.
    B I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.

3

65 A I like to do things that other people regard as un-
conventional.
   B I like to put in long hours of work without being
distracted.

71 A I would like to write a great novel or play.
   B I like to attack points of view that are contrary to
mine.

72 A When I am in a group, I like to accept the leadership
of someone else in deciding what the group is going
to do.
   B I feel like criticizing someone publicly if he or she
deserves it.

73 A I like to have my life so arranged that it runs smoothly
and without much change in my plans.
   B I get so angry that I feel like throwing and breaking
things.

74 A I like to ask questions which I know no one will be
able to answer.
   B I like to tell other people what I think of them.

75 A I like to avoid responsibilities and obligations.
   B I feel like making fun of people who do things that
I regard as stupid.

76 A I like to be loyal to my friends.
   B I like to do my very best in whatever I undertake.

77 A I like to observe how another individual feels in a
given situation.
   B I like to be able to say that I have done a difficult
job well.

78 A I like my friends to encourage me when I meet with
failure.
   B I like to be successful in things undertaken.

79 A I like to be one of the leaders in the organizations and
groups to which I belong.
   B I like to be able to do things better than other people
can.

80 A When things go wrong for me, I feel that I am more
to blame than anyone else.
   B I like to solve puzzles and problems that other people
have difficulty with.

81 A I like to do things for my friends.
   B When planning something, I like to get suggestions
from other people whose opinions I respect.

82 A I like to put myself in someone else's place and to
imagine how I would feel in the same situation.
   B I like to tell my superiors that they have done a good
job on something, when I think they have.

83 A I like my friends to be sympathetic and understanding
when I have problems.
   B I like to accept the leadership of people I admire.

84 A When serving on a committee, I like to be appointed
or elected chairperson.
   B When I am in a group, I like to accept the leadership
of someone else in deciding what the group is go-
ing to do.

85 A If I do something that is wrong, I feel that I should
be punished for it.
   B I like to conform to custom and to avoid doing things
that people I respect might consider unconventional.

86 A I like to share things with my friends.
   B I like to make a plan before starting in to do some-
thing difficult.

87 A I like to understand how my friends feel about vari-
ous problems they have to face.
   B If I have to take a trip, I like to have things planned
in advance.

88 A I like my friends to treat me kindly.
   B I like to have my work organized and planned before
beginning it.

89 A I like to be regarded by others as a leader.
   B I like to keep my letters, bills, and other papers neatly
arranged and filed according to some system.

90 A I feel that the pain and misery that I have suffered has
done me more good than harm.
   B I like to have my life so arranged that it runs smoothly
and without much change in my plans.

91 A I like to have strong attachments with my friends.
   B I like to say things that are regarded as witty and
clever by other people.

92 A I like to think about the personalities of my friends
and to try to figure out what makes them as they are.
   B I sometimes like to do things just to see what effect
it will have on others.

93 A I like my friends to make a fuss over me when I am
hurt or sick.
   B I like to talk about my achievements.

94 A I like to tell other people how to do their jobs.
   B I like to be the center of attention in a group.

95 A I feel timid in the presence of other people I regard
as my superiors.
   B I like to use words which other people often do not
know the meaning of.

96 A I like to do things with my friends rather than by
myself.
   B I like to say what I think about things.

97 A I like to study and to analyze the behavior of others.
    B I like to do things that other people regard as unconventional.

98 A I like my friends to feel sorry for me when I am sick.
    B I like to avoid situations where I am expected to do things in a conventional way.

99 A I like to supervise and to direct the actions of other people whenever I can.
    B I like to do things in my own way without regard to what others may think.

100 A I feel that I am inferior to others in most respects.
    B I like to avoid responsibilities and obligations.

101 A I like to be successful in things undertaken.
    B I like to form new friendships.

102 A I like to analyze my own motives and feelings.
    B I like to make as many friends as I can.

103 A I like my friends to help me when I am in trouble.
    B I like to do things for my friends.

104 A I like to argue for my point of view when it is attacked by others.
    B I like to write letters to my friends.

105 A I feel guilty whenever I have done something I know is wrong.
    B I like to have strong attachments with my friends.

106 A I like to share things with my friends.
    B I like to analyze my own motives and feelings.

107 A I like to accept the leadership of people I admire.
    B I like to understand how my friends feel about various problems they have to face.

108 A I like my friends to do many small favors for me cheerfully.
    B I like to judge people by why they do something—not by what they actually do.

109 A When with a group of people, I like to make the decisions about what we are going to do.
    B I like to predict how my friends will act in various situations.

110 A I feel better when I give in and avoid a fight, than I would if I tried to have my own way.
    B I like to analyze the feelings and motives of others.

111 A I like to form new friendships.
    B I like my friends to help me when I am in trouble.

112 A I like to judge people by why they do something—not by what they actually do.
    B I like my friends to show a great deal of affection toward me.

113 A I like to have my life so arranged that it runs smoothly and without much change in my plans.
    B I like my friends to feel sorry for me when I am sick.

114 A I like to be called upon to settle arguments and disputes between others.
    B I like my friends to do many small favors for me cheerfully.

115 A I feel that I should confess the things that I have done that I regard as wrong.
    B I like my friends to sympathize with me and to cheer me up when I am depressed.

116 A I like to do things with my friends rather than by myself.
    B I like to argue for my point of view when it is attacked by others.

117 A I like to think about the personalities of my friends and to try to figure out what makes them as they are.
    B I like to be able to persuade and influence others to do what I want to do.

118 A I like my friends to sympathize with me and to cheer me up when I am depressed.
    B When with a group of people, I like to make the decisions about what we are going to do.

119 A I like to ask questions which I know no one will be able to answer.
    B I like to tell other people how to do their jobs.

120 A I feel timid in the presence of other people I regard as my superiors.
    B I like to supervise and to direct the actions of other people whenever I can.

121 A I like to participate in groups in which the members have warm and friendly feelings toward one another.
    B I feel guilty whenever I have done something I know is wrong.

122 A I like to analyze the feelings and motives of others.
    B I feel depressed by my own inability to handle various situations.

123 A I like my friends to feel sorry for me when I am sick.
    B I feel better when I give in and avoid a fight, than I would if I tried to have my own way.

124 A I like to be able to persuade and influence others to do what I want.
    B I feel depressed by my own inability to handle various situations.

125 A I like to criticize people who are in a position of authority.
    B I feel timid in the presence of other people I regard as my superiors.

126 A I like to participate in groups in which the members have warm and friendly feelings toward one another.
    B I like to help my friends when they are in trouble.

127 A I like to analyze my own motives and feelings.
    B I like to sympathize with my friends when they are hurt or sick.

128 A I like my friends to help me when I am in trouble.
    B I like to treat other people with kindness and sympathy.

129 A I like to be one of the leaders in the organizations and groups to which I belong.
    B I like to sympathize with my friends when they are hurt or sick.

130 A I feel that the pain and misery that I have suffered has done me more good than harm.
B I like to show a great deal of affection toward my friends.

131 A I like to do things with my friends rather than by myself.
B I like to experiment and to try new things.

132 A I like to think about the personalities of my friends and to try to figure out what makes them as they are.
B I like to try new and different jobs—rather than to continue doing the same old things.

133 A I like my friends to be sympathetic and understanding when I have problems.
B I like to meet new people.

134 A I like to argue for my point of view when it is attacked by others.
B I like to experience novelty and change in my daily routine.

135 A I feel better when I give in and avoid a fight, than I would if I tried to have my own way.
B I like to move about the country and to live in different places.

136 A I like to do things for my friends.
B When I have some assignment to do, I like to start in and keep working on it until it is completed.

137 A I like to analyze the feelings and motives of others.
B I like to avoid being interrupted while at my work.

138 A I like my friends to do many small favors for me cheerfully.
B I like to stay up late working in order to get a job done.

139 A I like to be regarded by others as a leader.
B I like to put in long hours of work without being distracted.

140 A If I do something that is wrong, I feel that I should be punished for it.
B I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.

146 A I like to write letters to my friends.
B I like to read newspaper accounts of murders and other forms of violence.

147 A I like to predict how my friends will act in various situations.
B I like to attack points of view that are contrary to mine.

148 A I like my friends to make a fuss over me when I am hurt or sick.
B I feel like blaming others when things go wrong for me.

149 A I like to tell other people how to do their jobs.
B I feel like getting revenge when someone has insulted me.

150 A I feel that I am inferior to others in most respects.
B I feel like telling other people off when I disagree with them.

151 A I like to help my friends when they are in trouble.
B I like to do my very best in whatever I undertake.

152 A I like to travel and to see the country.
B I like to accomplish tasks that others recognize as requiring skill and effort.

153 A I like to work hard at any job I undertake.
B I would like to accomplish something of great significance.

155 A I like to read newspaper accounts of murders and other forms of violence.
B I would like to write a great novel or play.

156 A I like to do small favors for my friends.
B When planning something, I like to get suggestions from other people whose opinions I respect.

157 A I like to experience novelty and change in my daily routine.
B I like to tell my superiors that they have done a good job on something, when I think they have.

158 A I like to stay up late working in order to get a job done.
B I like to praise someone I admire.

160 A I feel like getting revenge when someone has insulted me.
B When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.

161 A I like to be generous with my friends.
B I like to make a plan before starting in to do something difficult.

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162 A I like to meet new people.
   B Any written work that I do I like to have precise, neat, and well organized.

163 A I like to finish any job or task that I begin.
   B I like to keep my things neat and orderly on my desk or workspace.

165 A I like to tell other people what I think of them.
   B I like to have my meals organized and a definite time set aside for eating.

166 A I like to show a great deal of affection toward my friends.
   B I like to say things that are regarded as witty and clever by other people.

167 A I like to try new and different jobs—rather than to continue doing the same old things.
   B I sometimes like to do things just to see what effect it will have on others.

168 A I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.
   B I like people to notice and to comment upon my appearance when I am out in public.

170 A I feel like blaming others when things go wrong for me.
   B I like to ask questions which I know no one will be able to answer.

171 A I like to sympathize with my friends when they are hurt or sick.
   B I like to say what I think about things.

172 A I like to eat in new and strange restaurants.
   B I like to do things that other people regard as unconventional.

173 A I like to complete a single job or task at a time before taking on others.
   B I like to feel free to do what I want to do.

175 A I get so angry that I feel like throwing and breaking things.
   B I like to avoid responsibilities and obligations.

176 A I like to help my friends when they are in trouble.
   B I like to be loyal to my friends.

177 A I like to do new and different things.
   B I like to form new friendships.

178 A When I have some assignment to do, I like to start in and keep working on it until it is completed.
   B I like to participate in groups in which the members have warm and friendly feelings toward one another.

180 A I like to attack points of view that are contrary to mine.
   B I like to write letters to my friends.

181 A I like to be generous with my friends.
   B I like to observe how another individual feels in a given situation.

182 A I like to eat in new and strange restaurants.
   B I like to put myself in someone else's place and to imagine how I would feel in the same situation.

183 A I like to stay up late working in order to get a job done.
   B I like to understand how my friends feel about various problems they have to face.

185 A I feel like making fun of people who do things that I regard as stupid.
   B I like to predict how my friends will act in various situations.

186 A I like to forgive my friends who may sometimes hurt me.
   B I like my friends to encourage me when I meet with failure.

187 A I like to experiment and to try new things.
   B I like my friends to be sympathetic and understanding when I have problems.

188 A I like to keep working at a puzzle or problem until it is solved.
   B I like my friends to treat me kindly.

190 A I feel like criticizing someone publicly if he or she deserves it.
   B I like my friends to make a fuss over me when I am hurt or sick.

191 A I like to show a great deal of affection toward my friends.
   B I like to be regarded by others as a leader.

192 A I like to try new and different jobs—rather than to continue doing the same old things.
   B When serving on a committee, I like to be appointed or elected chairperson.

193 A I like to finish any job or task that I begin.
   B I like to be able to persuade and influence others to do what I want.

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195 A I get so angry that I feel like throwing and breaking things.
    B I like to tell other people how to do their jobs.

196 A I like to show a great deal of affection toward my friends.
    B When things go wrong for me, I feel that I am more to blame than anyone else.

197 A I like to move about the country and to live in different places.
    B If I do something that is wrong, I feel that I should be punished for it.

198 A I like to stick at a job or problem even when it may seem as if I am not getting anywhere with it.
    B I feel that the pain and misery that I have suffered has done me more good than harm.

200 A I feel like blaming others when things go wrong for me.
    B I feel that I am inferior to others in most respects.

201 A I like to do my very best in whatever I undertake.
    B I like to help other people who are less fortunate than I am.

202 A I like to do new and different things.
    B I like to treat other people with kindness and sympathy.

203 A When I have some assignment to do, I like to start in and keep working on it until it is completed.
    B I like to help other people who are less fortunate than I am.

205 A I like to attack points of view that are contrary to mine.
    B I like my friends to confide in me and to tell me their troubles.

206 A I like to treat other people with kindness and sympathy.
    B I like to travel and to see the country.

207 A I like to conform to custom and to avoid doing things that people I respect might consider unconventional.
    B I like to participate in new fads and fashions.

208 A I like to work hard at any job I undertake.
    B I like to experience novelty and change in my daily routine.

210 A I feel like telling other people off when I disagree with them.
    B I like to participate in new fads and fashions.

211 A I like to help other people who are less fortunate than I am.
    B I like to finish any job or task that I begin.

212 A I like to move about the country and to live in different places.
    B I like to put in long hours of work without being distracted.

213 A If I have to take a trip, I like to have things planned in advance.
    B I like to keep working at a puzzle or problem until it is solved.

215 A I like to tell other people what I think of them.
    B I like to avoid being interrupted while at my work.

221 A I like my friends to confide in me and to tell me their troubles.
    B I like to read newspaper accounts of murders and other forms of violence.

222 A I like to participate in new fads and fashions.
    B I feel like criticizing someone publicly if he or she deserves it.

223 A I like to avoid being interrupted while at my work.
    B I feel like telling other people off when I disagree with them.

225 A I like to avoid responsibilities and obligations.
    B I feel like making fun of people who do things that I regard as stupid.

EDWARDS PERSONAL PREFERENCE SCHEDULE

S.S.# _____ CLASS# _____ TEST BOOK# _____

For each numbered item in the booklet select either statement A or B and *encircle* A or B alongside the corresponding number on this sheet.

															n	r	c	s
1 A B	6 A B	11 A B	16 A B	21 A B	26 A B	31 A B	36 A B	41 A B	46 A B	51 A B	56 A B	61 A B	71 A B	ach	___	___	___
2 A B	7 A B	12 A B	17 A B	22 A B	27 A B	32 A B	37 A B	42 A B	47 A B	52 A B	57 A B	62 A B	72 A B	def	___	___	___
3 A B	8 A B	13 A B	18 A B	23 A B	28 A B	33 A B	38 A B	43 A B	48 A B	53 A B	58 A B	63 A B	73 A B	ord	___	___	___
4 A B	9 A B	14 A B	19 A B	24 A B	29 A B	34 A B	39 A B	44 A B	49 A B	54 A B	59 A B	64 A B	74 A B	exh	___	___	___
5 A B	10 A B	15 A B	20 A B	25 A B	30 A B	35 A B	40 A B	45 A B	50 A B	55 A B	60 A B	65 A B	75 A B	aut	___	___	___

76 A B	81 A B	86 A B	91 A B	96 A B	101 A B	106 A B	111 A B	116 A B	121 A B	126 A B	131 A B	136 A B	146 A B	aff	___	___	___
77 A B	82 A B	87 A B	92 A B	97 A B	102 A B	107 A B	112 A B	117 A B	122 A B	127 A B	132 A B	137 A B	147 A B	int	___	___	___
78 A B	83 A B	88 A B	93 A B	98 A B	103 A B	108 A B	113 A B	118 A B	123 A B	128 A B	133 A B	138 A B	148 A B	suc	___	___	___
79 A B	84 A B	89 A B	94 A B	99 A B	104 A B	109 A B	114 A B	119 A B	124 A B	129 A B	134 A B	139 A B	149 A B	dom	___	___	___
80 A B	85 A B	90 A B	95 A B	100 A B	105 A B	110 A B	115 A B	120 A B	125 A B	130 A B	135 A B	140 A B	150 A B	aba	___	___	___

151 A B	156 A B	161 A B	166 A B	171 A B	176 A B	181 A B	186 A B	191 A B	196 A B	201 A B	206 A B	211 A B	221 A B	nur	___	___	___
152 A B	157 A B	162 A B	167 A B	172 A B	177 A B	182 A B	187 A B	192 A B	197 A B	202 A B	207 A B	212 A B	222 A B	chg	___	___	___
153 A B	158 A B	163 A B	168 A B	173 A B	178 A B	183 A B	188 A B	193 A B	198 A B	203 A B	208 A B	213 A B	223 A B	end	___	___	___
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155 A B	160 A B	165 A B	170 A B	175 A B	180 A B	185 A B	190 A B	195 A B	200 A B	205 A B	210 A B	215 A B	225 A B	agg	___	___	___

DO NOT WRITE BELOW THIS LINE

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APPROVAL SHEET

The dissertation submitted by Thomas L. Watson
has been read and approved by the following committee:

    Dr. Todd Hoover, Director
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The final copies have been examined by the director of the
dissertation and the signature which appears below
verifies the fact that any necessary changes have been
incorporated and that the dissertation is now given
final approval by the Committee with reference to content
and form.

The dissertation is therefore accepted in partial
fulfillment of the requirements for the degree of
Doctor of Philosophy.

_4 / 17 / 85_____   _Todd Hoover_____
Date   Director's Signature